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Bulletin

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"ETIOLOGY UNKNOWN" *

MARCUS HAASE, M.D.
MEMPHIS, TENN.

I doubt seriously whether there is a more humiliating moment in the life of a medical man, either as teacher or practitioner, than when asked by a student or patient, "What is the cause of this?" and he is forced to say, "I do not know."

While it is true that few diseases of the skin end fatally, they not infrequently play havoc with the lives of the afflicted. I recall the case of an otherwise beautiful woman whose life was devoted to social service work among the handicapped, the blind and the crippled, who gave up her work and is now living in seclusion because of the marring effect of vitiligo. In another instance, one of the most brilliant young lawyers of our community was forced to withdraw from a promising career in both law and politics, for the same reason. And I have never been able to satisfy myself that the suicide of a young woman whom I knew was not due, to some extent, to an intractable psoriasis.

There are no more earnest, devoted, painstaking men in medicine than the dermatologists. As clinical diagnosticians, they are not excelled in any branch, and our ability as nosologists is frequently the cause of friendly chaffing by men in other specialties. It is true that our nomenclature is crowded with fine distinctions, but I wonder whether this ability, of which we all are so justly proud, has not been gained at the expense of the more profound study of etiology.

Is this knowledge of such great importance?

Some years ago, and this may still be true, there was an orderly in St. Louis Hospital in Paris, whose clinical diagnostic ability and remembrance of previously shown cases was rarely excelled by the best of the consultants.

It is gratifying to be able to distinguish the Jadassohn from the Juliusberg type of scaly erythrodermias, but general medicine would be more grateful for the knowledge of the causative factor, which is, no doubt, the same in the two.

White,[1] in his chairman's address before this section in 1912, named eleven diseases in which the etiology was unknown—he might have mentioned more, but he used only those occurring ten or more times among new patients. The list included eczema, alopecia furfuracea, alopecia areata, hypertrichosis, psoriasis, hyperhidrosis, pruritus and pityriasis rosea, and these are just a few with etiology unknown that are observed almost daily by all of us.

One must pay tribute to Ormsby and Mitchell for their pioneer work in this country in mycology which removed from the eczema group a number of dermatoses, the etiology of which was still in doubt. But, aside from this, the work done on this group has been limited.

Except the work done by Schamberg, Kolmer and Raiziss on psoriasis in 1913, no serious research work has been reported in this disease since this address was presented.

An article that appeared only recently in one of our best journals shows how little we know of the etiology of alopecia furfuracea. The author attempted to ascribe to definite organisms the several types of the disease. All of the organisms mentioned in the article have been obtained from follicles of sebaceous glands of apparently normal skins.

Nothing new, worthy of serious consideration, has been published in many years as to the cause of alopecia areata; and to consider it simply a "nervous disturbance," as do many authorities, seems to me unworthy of scientific men. The cases occurred in adults under my care. The condition rapidly became generalized, and the patients subsequently died of visceral cancer. This may have been only a peculiar coincidence, but it is certainly worthy of note.

Sutton,[2] in his chairman's address in 1914, said, "In dispensaries and hospitals having an annual registry running into thousands, not a single good piece of investigative work has been done in years." This is a serious charge and was possibly overstated, but it contained, and still contains, sufficient truth to make one a trifle anxious as to the future development and progress of dermatology.

The Year Book is a fair index of all that is new, and a careful review of it for the last ten years forces one to the conclusion that very little has been accomplished in etiology, especially in those diseases suggesting internal pathologic changes; and this is more marked in the last five years than in the preceding five.

Except for the recent work done on syphilis and mycology, a textbook published in 1918 is almost as useful as one written yesterday.

How much the neglect of research investigation during the last few years was due to the war, it is hard to say, but, regardless of the cause, we have certainly failed to arouse ourselves from the lethargy that now seems to possess us.

* Chairman's address, read before the Section on Dermatology and Syphilology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

1. White, C. J.: The Shortcomings of Dermatology, J. A. M. A. 58: 1915 (June 22) 1912.

2. Sutton, R. L.: The Future of Dermatology in America, J. A. M. A. 63: 133 (July 11) 1914.

I feel that the remedy for this condition is the thorough recognition that dermatology is nothing more, and certainly nothing less, than a highly specialized branch of internal medicine.

I wonder how many have listened to, or have read since it was published, Wende's address on a somewhat similar subject, thirteen years ago, in which he said, "Most diseases of the skin are nothing but symptoms or complications of constitutional or special morbid states," and that "we as dermatologists should make some effort to bridge the ever-widening separation between our specialty and the field of internal medicine." He pleaded for more cooperation between the dermatologist and the internist. Am I pessimistic when I say that, in my opinion, we are farther apart than we were at that time?

It might be possible, working alone in well equipped clinics and laboratories, ultimately to solve some of these problems; but I am convinced that it could be accomplished in much less time by cooperation with the internist, chemist and pathologist. Internal medicine has made rapid strides during the last few years, and the progress has been accomplished through cooperation with the chemist and the pathologist. I insist, with due humility, that, as a group, we have not kept pace with them. Every well equipped hospital today maintains full-time men in chemistry and pathology, and I have always found them not only willing but also anxious to assist in solving problems of this sort.

Wile's brilliant work on visceral syphilis, of which we as dermatologists have cause to feel a personal gratification, was no doubt made more pleasant through his daily, cordial contact with internist and pathologist.

Howard Morrow suggested treating patients with obscure eruptions in hospitals where they can be studied from all phases by many physicians, including the dermatologist, pathologist, chemist and internist. We will all agree that this would be a consummation earnestly to be desired but it is impracticable in many hospitals today on account of the crowded condition, especially those devoted entirely to medical relief; but in hospitals attached to institutions claiming to do research work, more beds should be allotted to dermatologic cases and every effort made to interest the internist and pathologist in these patients.

The young graduate seriously considering the study and practice of dermatology as his professional career should have at least one year in internal medicine and pathology.

I wish to commend for your serious consideration, and especially to the younger men, an editorial by Pusey[3] that appeared in a recent number of the *Archives of Dermatology and Syphilology* on "The Need for More Monographs and Fewer Books on Dermatology as a Whole," as no one could undertake this work without facing one or more of these perplexing questions.

CONCLUSION

In my judgment, the solution of these vexing problems is:

1. More cordial cooperation among the dermatologist, internist and pathologist.
2. The serious study of internal medicine and pathology by young men entering the field of dermatology.
3. More monographs on dermatoses of unknown etiology.

3. The Need for More Monographs and Fewer Books on Dermatology as a Whole, editorial, Arch. Dermat. & Syph. 7: 637 (May) 1923.

CONDITION OF THE COMMON DUCT AFTER CHOLECYSTECTOMY *

E. STARR JUDD, M.D.
ROCHESTER, MINN.

As a result of the development of the surgery of the biliary tract to its present state, many problems are presenting themselves which require serious consideration. The first conception of disease of the biliary tract was associated almost entirely with gallstones, but it was soon realized that calculi were only a part of the trouble and that, in most instances, the infection is in the tissues. At first the infection was believed to be only in the walls of the gallbladder. Now it is realized that it must often be regarded as a pan-infection, since it extends to the hepatic and pancreatic tissues. During the quiescent state of the infection it is probably present in the gallbladder in a low state of virulence, while during the active state, when the infection is manifested clinically, it not only becomes more virulent in the gallbladder, but is distributed to the other parts of the biliary tract. The gallbladder seems to be the focus in which these infections are retained in an inactive state most of the time. Evidence is accumulating which will tend to reveal the infected gallbladder as a focus of infection which gives rise to symptoms in a remote organ, and there is every reason to believe that, in certain instances, it might be the source of a more or less general infection. These views with regard to inflammation in the gallbladder have advanced the indications for treatment to extirpation of the gallbladder. Whether the gallbladder is removed by operation or destroyed by inflammation, the results will be the same. It is the changes which occur as a result of the loss of the gallbladder that I wish particularly to discuss in this paper.

The gallbladder undoubtedly performs several functions, and yet it is by no means indispensable. When the gallbladder is sacrificed, several compensatory anatomic and physiologic changes occur and are more or less constant, which is proof that a normal gallbladder takes part in such functions.

The principal anatomic change, following cholecystectomy, is the dilatation that occurs in the extrahepatic ducts. The dilatation may vary in degree, but is always present, as has been proved by experiment and clinical observation. The dilatation begins at the surface of the liver, but does not affect the intrahepatic ducts. It extends throughout the hepatic and common ducts and the stump of the cystic duct. The intraduct bile pressure is maintained by the secretion of bile in the liver, the resistance to the flow of bile offered by the sphincter muscles at the ampulla, and also by such outside influences as intra-abdominal pressure. Great changes in bile pressure have been noted during the act of vomiting. The fact that the bile ducts dilate after the gallbladder has been sacrificed would seem to support the contention that one of the functions of the gallbladder is that of a tension bulb to equalize the bile pressure. With this tension bulb removed, the same inequalities in pressure occur in the common duct. As a result, this bile duct first dilates, and then the sphincter at the ampulla becomes incapacitated, resulting in the continuous flow of bile into the duodenum.

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

The action of this sphincter muscle seems to be controlled by the character of the food in the lumen of the duodenum, so that when bile is needed, it is released, and when it is not wanted, the sphincter is closed. After cholecystectomy, the whole mechanism that controls the physiology of this part of digestion seems to be changed because of loss of the tone of the sphincter muscle. Bile flows continuously into the duodenum, and usually the bile from the liver is secreted under very little, if any, intraduct pressure. As a result of this rather marked change in the physiologic condition, there are very few clinical manifestations, and apparently no harmful results. Certain patients on whom cholecystectomy has been performed mention that at times they pass considerable bile from their bowels, independent of the normal bowel movements, and it is likely that this is the result of the continuous flow of bile through the ampulla.

TABLE 1.—*Recurrence of Symptoms After Cholecystectomy Possibly Due to Hepatitis and Pancreatitis*

Total number of patients	24	
Males	7	
Females	17	
Average age of the 24 patients	45	years
Youngest	20	
Oldest	69	

Bile that remains in the gallbladder for any length of time becomes much more concentrated than normal bile. It is darker because of the proportionate increase in bile pigment. The importance of such concentration has not been shown. It may possibly indicate that the function of the gallbladder is that of storage, but because of its small size in comparison with the amount of bile secreted, it must concentrate the bile by the absorption of water, and in this way retain the active ingredients. The importance of such function has not been estimated, except that it is well known that there are no clinical signs of any change as a result of the loss of this function by cholecystectomy. It has been suggested that the common duct assumes this function of concentrating the bile when the gallbladder has been destroyed, but experimental evidence seems to show that this is not possible; it is more probable that, when the gallbladder is missing, this function is eliminated. So far as it has been determined, loss of the organ does not make any change in the life of the patient. It has been said that the concentrated bile is the cause of the frequent occurrence of calculi in the gallbladder and that after cholecystectomy stones will be more likely to form in the common duct. Clinical studies and experimental evidence do not bear this out. The results of removal of the gallbladder, in my experience, do not indicate that stones form in the common duct more frequently in these cases than if the gallbladder were present. Furthermore, experimental data seem to show that bile does not become concentrated in the common duct.

The results following most operations on the gallbladder and biliary ducts are satisfactory. However, symptoms continue or recur in certain patients in whom good results might have been expected. Since excision of the gallbladder has been generally practiced, I have noted that the recurrence of symptoms is most often due to stones in the common duct. In some instances, at least, these stones formed, in all probability, after the removal of the gallbladder; but in most cases they recurred too soon after the operation for the formation of secondary stones, and undoubtedly these calculi had been overlooked at the time of the first operation. A certain proportion of the patients, especially those in whom the common duct was opened, have a few attacks of mild colic during their convalescence, which have been attributed to the passage of mucus or sloughs of tissue. It is difficult to prove whether the symptoms are due to these conditions or whether they are the last clinical signs of the infection in the hepatic or pancreatic tissue; but usually all signs of the trouble disappear in a short time.

There is still another group of cases in which the symptoms continue after a long interval and, because of their typical character and the continuation of the trouble, a diagnosis of stone in the common duct is made, yet at the second operation no calculi or other trouble in the duct is found and it is difficult to explain the cause of the symptoms. Of course, it is possible that there was a stone in the duct that passed; but the duct, although always dilated, is thin walled and without the usual signs of inflammation revealed in the cases of common duct stone. It is assumed that in cases of gallstone there is usually infection involving the liver, pancreas and regional lymphatics, and I believe that some inflammation remains in the tissues when the symptoms continue or recur after the usual operation in which neither calculi nor infection are found in the ducts. One year ago, one of my assistants (Dr. Burden), at my suggestion, began a clinical study of this group of cases. He found that we had reoperated in twenty-four cases in which the meager pathologic lesion disclosed did not explain the symptoms. At the present time some of these cases would undoubtedly be classified as hepatitis or pancreatitis, although it is often difficult to interpret the chronic changes in the liver and pancreas (Table 1). Of the twenty-four patients operated on the second time, seven were men and seventeen women. The youngest was 20 years old and the oldest 69; the average age was 45.

TABLE 2.—*Symptoms and Findings*

SYMPTOMS BEFORE THE PRIMARY GALLBLADDER OPERATION		
Shortest duration of symptoms	3	months
Longest duration of symptoms	15	years
Average duration of symptoms	43.5	months
Typical severe colic	22	cases
Upper abdominal pain, not colicky	1	case
Gastric symptoms of a reflex nature	1	case
Jaundice with the attacks	10	cases
Fever present with attacks	4	cases
FINDINGS AT THE ORIGINAL OPERATION		
Primary operation elsewhere	15	cases
Primary operation in our clinic	9	cases
Cholecystitis of varying degree	24	cases
Stones in the gallbladder	15	cases
Stones in the common duct	2	cases
Appendicitis	8	cases
TYPE OF ORIGINAL OPERATION		
Primary cholecystectomy	19	cases
Appendectomy, secondarily	13	cases
Cholecystostomy followed later by cholecystectomy	5	cases
Choledochotomy	1	case

SYMPTOMS BEFORE THE ORIGINAL OPERATION ON THE GALLBLADDER

The longest duration of symptoms was fifteen years and the shortest, three months, the average time being forty-three and one-half months. Typically severe hepatic colic occurred in twenty-two cases; upper abdominal pain, not colicky, in one, and reflex gastric symptoms in one. Jaundice was associated with attacks in ten cases and absent in fourteen; there was fever in

four. The foregoing symptoms correspond with the usual history elicited from patients suffering from gallbladder disease.

FINDINGS AT ORIGINAL OPERATION

The primary operation was performed in the clinic on nine patients and elsewhere on fifteen. Detailed information was obtained with regard to the pathologic condition found in nine patients; the findings in the remaining fifteen were based on the information given the patients by their surgeons. In several instances the patients brought letters describing the findings at the original operation.

TABLE 3.—*Symptoms After Cholecystectomy and Findings at Second Operation*

SYMPTOMS AFTER CHOLECYSTECTOMY	
Onset of symptoms	few weeks to 4½ years
Symptoms appeared during convalescence	9 cases
Symptoms appeared at an average of 2 months in remainder	15 cases
Severe colicky type of pain	24 cases
Associated chills and fever	2 cases
Jaundice with the attacks	13 cases
Clay colored stools in 6 of the	13 cases
Duration of symptoms before reoperation	3 weeks to 7 years
Average duration of symptoms before reoperation	12.7 months
FINDINGS AT REOPERATION IN THE TWENTY-FOUR CASES	
Pancreatitis	17 cases
Grade 1	4 cases
Grade 2	7 cases
Grade 3	5 cases
Grade 4	1 case
Cholangeitis	3 cases
Enlargement of the liver	3 cases
Enlargement of the spleen	1 case
Small granulating mass at stump of cystic duct	2 cases
Regional adhesions of the usual type	18 cases
Common duct dilated in	24 cases
No actual pathologic changes demonstrable	2 cases
Appendicitis	5 cases

The gallbladder was found diseased in all of the twenty-four patients; it contained stones in fifteen. Stones were found in the common duct in two instances. Pancreatitis was an associated lesion in four, and there may have been other lesions of which there was no record. The appendix was diseased in eight. These are the usual pathologic lesions encountered in operations of this type.

TYPE OF ORIGINAL OPERATION

Primary cholecystectomy was performed in nineteen cases and appendectomy was performed secondarily in thirteen of these. Cystostomy, followed later by cystectomy, was performed in five. The common duct was opened in one.

SYMPTOMS AFTER CHOLECYSTECTOMY

The time of onset of symptoms after operation varied from a few weeks to four and a half years. In nine of the cases, the symptoms appeared during convalescence. In the remaining fifteen they appeared on an average of two months after operation. Severe colicky pain was present in all cases. Chills and fever were associated in two cases. Jaundice with the attacks was noted in thirteen cases, and in six of these the stools were clay colored. The duration of symptoms before reoperation varied from three weeks to seven years, the average being twelve and seven-tenths months.

In twenty-three cases a diagnosis of obstruction of the common duct due to stone or pancreatitis was made. This diagnosis was based on severe hepatic colic after cholecystectomy, which occurred in attacks, and was often associated with chills, fever, intermittent jaundice and, occasionally, clay-colored stools. Pancreatitis was diagnosed in one case; malignancy was suspected in one, and there was evidence of biliary cirrhosis in one.

FINDINGS AT SECOND OPERATION

The principal lesion noted was pancreatitis, which was present in seventeen of the cases. Undoubtedly, in most of these seventeen cases, some change in the pancreas existed at the time of the first operation, but it was not recognized. It is not likely that pancreatitis would develop as a result of removal of the gallbladder. The degree of involvement of the gland was graded on a basis of 1 to 4. Four cases were graded 1; seven cases, 2; five cases, 3, and one case, 4. The pancreatic lesions were determined by the palpating hand, and in a few instances by inspection of the gland. In no instance did the surgeon get the impression that the gland was malignant. The pancreatic lesions did not cause obstruction of the common duct, so far as could be determined at the time of the operation. The common duct was opened and explored in all cases; probes and forceps passed freely into the duodenum.

There was evidence of cholangeitis in three cases, of hepatitis in two; the regional lymphatic glands were enlarged in two, the liver was enlarged in three, and the spleen in one. The common duct was dilated beyond normal size in all the cases. In two cases small granulating masses were found in the stump of the cystic duct. A diseased appendix was found in five. Adhesions of the usual kind following operations on the gallbladder were present in eighteen, but none of these caused obstruction of the ducts and were not considered responsible for any of the major symptoms. In two cases no actual lesions were found, although common duct drainage was established for purely empiric reasons.

TYPE OF SECOND OPERATION

The common duct was opened and explored. In twenty-three of the twenty-four cases drainage of the ducts was established, usually by a Robson hepaticus drain. In two instances, the duct was closed tightly by suture after the exploration. Appendectomy was performed secondarily in five cases and excision of the stump of the cystic duct in two. In cases of drainage of the ducts, bile discharged through a tube, or through the fistulous tract, for from three to four weeks. One patient died in the hospital from hemorrhage, cholangeitis and biliary cirrhosis.

TABLE 4.—*Type and Results of Second Operation*

TYPE	
Cholecystostomy	22 cases
Cholecystotomy	2 cases
Excision of the stump of the cyst duct, secondarily	2 cases
Appendectomy, secondarily	5 cases
RESULTS	
Able to trace 22 of the 24 patients	3 deaths
Died in hospital from hemorrhage and cholangeitis	1
Died, cause unknown	1
Died, "general collapse" two years after operation	1
Complaining of former symptoms	3 cases
Biliary cirrhosis	1
Attacks severe pain and clay-colored stools	1
Discomfort in epigastrium (not colicky in nature)	1
Entirely relieved of all symptoms	16 cases

Follow-up letters were sent to all of the patients in an endeavor to learn their present state of health. Information was obtained concerning the ultimate result in twenty-two instances. Three patients are dead. One died in the hospital after the operation, one died of unknown causes after leaving the hospital,

and one died from "general collapse" two years after the operation, but had been completely relieved of the symptoms for which the operation was performed. Three patients still complain of their former symptoms, one has biliary cirrhosis, one has severe attacks of pain associated with clay-colored stools, and the other, although still having pain and discomfort in the epigastrium, does not have the severe colics of which he complained before the operation. Sixteen patients have been entirely relieved of their symptoms, in most instances in from four to six weeks after the operation. One continued to have symptoms for one year and another for four years, but both are now in good health.

These results seem to justify the course of surgical treatment which has been carried out on this group of patients. As usual, empiricism has led the way; it remains for theory and experimentation to establish the correct explanation.

In all probability, the cause of the severe colics from which these patients suffered was not stones or other obstruction in the ducts, because at operation the ducts were carefully explored; bile flowed freely and was apparently normal, and scoops and probes could be passed easily down the ducts. Intrahepatic stones were not the cause, as none were found, and yet the patients were relieved by drainage of the ducts.

TABLE 5.—*Forty-Seven Cases of Stricture of the Bile Ducts*

Findings at primary operation:	
Stones in either the gallbladder or cystic duct	28 cases
Stones in the common duct	8 cases
Cholecystitis, only	12 cases
Empyema	5 cases
Primary stricture of the common duct	5 cases
Type of primary operation:	
Cholecystostomy followed by cholecystectomy	15 cases
Primary cholecystectomy	30 cases
Choledochotomy (stones in the duct in 7)	10 cases
Primary reconstruction common duct for stricture	5 cases
Total primary and secondary cholecystectomies	42 cases

The explanation appears to lie in the persistence of infection in the pancreas and liver, and, in a few instances, in the appendix. Two patients were completely relieved by removal of the diseased appendix, and the common duct, after being explored, was closed tightly by suture. In a considerable number of cases of cholecystitis the pancreas is involved, probably by lymphatic extension from the infected gallbladder. In most of these the pancreatitis subsides after the removal of the gallbladder. It is quite likely that, in a small percentage, the infection in the pancreas will persist. If the infection is primary in the pancreas, it would not, of course, be relieved by cholecystectomy. It is known that pancreatitis can cause jaundice without marked intraductal obstruction. In such cases the gallbladder and common duct are dilated, which is evidence of the fact that the gallbladder possesses an important function as a tension bulb. These patients do not have pain. When the gallbladder is removed, the tension is removed and temporary or transient swelling of the pancreas causes biliary obstruction; the back pressure and distention of the extrahepatic and intrahepatic ducts is the same as that caused by stones in the duct.

After reviewing the histories of these patients, we are convinced that an accurate diagnosis cannot always be made. The picture is that of intermittent biliary obstruction, and the usual cause is stone in the common duct. The surgeon should not be disappointed if he occasionally fails to find stone. Drainage of the ducts will relieve the symptoms in most instances.

STRICTURE OF THE COMMON DUCT

A continuation or a recurrence of the symptoms after the gallbladder has been removed may be due to stricture in the common duct; a series of attacks of colic, beginning a few days after the operation, are not uncommon in cases of cholecystectomy; these disappear at the end of about two weeks. In some instances, the symptoms probably indicate the passage of a small stone through the duct, or the fact that the duct was obstructed by the accumulation of mucus. The latter seems more likely, since it has been shown experimentally that mucus may accumulate in the duct in such a way as to cause obstruction (Rous). It is also possible that these symptoms may be the result of slight and temporary narrowing or stricturing of the common duct, resulting from a technical step in the operation. Inflammatory reaction around the duct and the formation of hematomas might cause these conditions. If the removed gallbladder had been completely destroyed by the inflammatory changes, then compensatory changes would have occurred; on the other hand, if the gallbladder had not been completely destroyed, then these changes would undoubtedly be completed after cholecystectomy. I believe that these colicky attacks, occurring so soon after the operation, were due to changes in the common duct. In this particular type of case there are frequently several attacks of severe pain with sudden onset, usually requiring morphin. The attacks are exactly like the original colics. There is usually no jaundice. In certain cases, however, the presence of inflammation in the pancreas and liver must be considered; not all of the difficulty should be attributed to changes in the common duct. Usually from one to three or four attacks complete the trouble and there is no further evidence of stone, stricture or inflammation.

TABLE 6.—*Forty-Seven Cases of Stricture of the Bile Ducts*

Symptoms* of stricture:		
Jaundice		40 cases
Intermittent	28	
Constant from onset but varying in degree	12	
Biliary fistula		14 cases
Constant	5	
Intermittent	9	
Severe hepatic colics		23 cases

* The time of onset of the symptoms varied widely from a few days in two cases in which a stricture of the common duct was found at a second operation and probably existed at the time of the primary operation, to eight and one-half years. In one case in which the stricture was probably due to injury of the duct, the symptoms did not appear until four years later. Omitting the two extremes, nine weeks seemed to be a fair average for the time of appearance of the symptoms.

TABLE 7.—*Forty-Seven Cases of Stricture of the Bile Ducts*

Location of the stricture:		
Juncture of cystic with the common duct		27 cases
Common duct		17 cases
At the papilla		2 cases
Hepatic duct (might have been spasm)		1 case
Causes* of the stricture:		
Definite notation made in surgical records		16 cases
Injury	5	
Ulcerating stone cystic duct	3	
Stone in the common duct	8	
Cause of the stricture not stated		31 cases

* It is very probable that in the twenty-seven cases in which the stricture was located at the juncture of the cystic with the common duct, the etiologic factor was injury at the time of the removal of the gallbladder. In seven cases, stones were found above the stricture.

A true stricture of the common duct is usually the result of error in technic at the time of the original operation on the gallbladder. While it is possible that a stone which has been in the common duct for a long time may cause necrosis of the mucous membrane, or even penetrate the common duct and allow bile to escape, nevertheless it is a fact that stricture of the common duct very rarely follows removal of stones from the duct. There may be narrowing of the duct at the point from which the stone was removed, but with removal of the stone and possibly slight dilatation of the duct a normal sized lumen is restored and maintained.

In the records of forty-seven cases of stricture of the common duct which Burden and I reviewed recently, we noted, in five cases, this suggestion of a stricture of the duct at the point of lodgment of the stone. By dilatation, and in some instances by severing the strictured tissue, the patients were permanently relieved. All but five of the strictures followed some type of operation on the gallbladder or ducts. In these five cases, the stone was present in the duct at the time of the first operation. There were stones in the gallbladder or cystic duct in twenty-eight of the forty-seven cases, cholecystitis in twelve, and empyema of the gallbladder in five. In only eight cases were there stones in the common duct; in only ten cases was the common duct opened at the time of the first operation. Stones were present in seven and absent in three of the ten cases. It is of interest that of forty-seven cases in which a stricture of the common duct occurred after operation on the gallbladder, in only fifteen was the duct operated on at the time of the primary operation. Undoubtedly, in some of these the duct was injured, but the injury was not recognized.

It is difficult to explain just what occurs in cases in which, to all appearances, the course is perfectly normal for from several months to a year following cholecystectomy, after which time symptoms recur and a strictured duct is revealed. As we have observed such patients, their symptoms consist of intermittent, colicky attacks accompanied by jaundice, with intervals of complete remission, although the jaundice persists for a long time after the pain subsides. This has occurred in cases in which no operation was performed on the duct primarily, and yet a stricture was found at the second operation. While it is possible that some inflammatory change occurred within the duct, it seems more likely that the stricture, even though occurring some time after the operation, was probably the result of inflammatory changes in the tissue around the duct, which, as it closed down, produced narrowing of the lumen of the duct. It was formerly the custom to place considerable drainage gauze, tubes or rubber tissue in the wounds in these cases, and it is reasonable to believe that all of this foreign material caused much reaction in the surrounding tissue. A dense scar might result, which, in contracting, might interfere with the bile duct. I have not observed stricture in cases in which no drain, or only a very small one, was inserted, and I am inclined to believe that strictures of the common duct would be less common or would not exist if no drain were used. Any scheme whereby stricturing of the duct can be avoided should be considered because of the seriousness of the complication and the risk in correcting it and also because of the fact that a recurrence of the condition often occurs in cases in which the immediate result was satisfactory. Some of these patients have been operated on several times for the stricture; thirteen of the forty-seven have been operated on more than once.

THE FORMATION OF STONES IN THE COMMON DUCT AFTER REMOVAL OF THE GALLBLADDER

The statement, so often made, that stones will form more readily in the common duct after the gallbladder has been removed, is, I believe, usually made on hypothetic grounds. It has been contended that if the concentration of bile in the gallbladder is a factor in the formation of stone, then the loss of the gallbladder transfers this function to the common duct. Experimental data seem to show that such concentration cannot occur in the bile duct, and the dark, heavy, concentrated bile often found in the gallbladder is not seen in the common duct.

The symptoms of stone in the duct often occur too soon after the first operation for reformation of calculi, and in most instances these stones must have been present at the time of the first operation. It seems to me that it is impossible to rule out the presence of stones in the intrahepatic ducts and that, in spite of all precautions, calculi may occasionally be overlooked.

TABLE 8.—*Forty-Seven Cases of Stricture of the Bile Duct**

Types of operation:	
Dilation and incision	8
Excision, closure over tube or without tube	10
Plastic union of duct to the stomach or duodenum	15
Fistulous tract utilized (not satisfactory)	1
Hepaticoduodenostomy	13

* A second operation for a new stricture was performed in thirteen cases. The average time of appearance of symptoms in the thirteen was five and one-half months. Two patients had three operations.

Attempts have been made to trace patients from whom the gallbladder was removed a number of years ago. I hoped that the data obtained might enable us to arrive at some conclusion with regard to the proportion of cases in which stones do or do not form in the common duct after the gallbladder has been removed. These patients had all been operated on more than twenty years before; many who were old at the time of the operation have since died of intercurrent disease.

Follow-up letters were sent to the first 100 patients on whom cholecystectomies were performed in the Mayo Clinic (between 1896 and 1903). Cholecystectomy and choledochostomy were performed on thirteen patients. Five of these had cholecystitis and choledocholithiasis; seven had cholecystitis and cholelithiasis, and one had malignancy. Only one of the thirteen died, a patient with cholecystitis and choledocholithiasis. Nineteen of the eighty-seven cholecystectomies were performed for cholecystitis, with one death; sixty-seven were performed for cholecystitis and stones, with four deaths; one was performed for malignancy, and the patient died. The average mortality for the entire group of 100 patients was 7 per cent.

Thirty-two of the letters were answered either by the patient or by a relative. Information is available concerning thirty-nine patients, including patients who died as a result of the operation. Thirteen had died since leaving the hospital, at periods varying from two months to twenty-two years after operation. Eight of the thirteen had not had biliary symptoms after the operation; it was impossible to determine this point in four cases. One patient had had symptoms referable to the biliary system and four years after cholecystectomy a choledochostomy had been performed with

the removal of seven stones from the common duct. So far as we know, this is the only patient who developed common duct stones after cholecystectomy.

Nineteen of the thirty-two patients are still living and were operated on from twenty to twenty-seven years ago; the youngest is now aged 46 and the oldest 77; the average age is 63 years. All but one of the patients report that they are in good condition; this patient has symptoms not referable to the biliary system. None of the nineteen patients has had symptoms suggestive of common duct stone or any other biliary disorder, and naturally they have had no further operations on the biliary tract.

The striking feature of this series is that, in spite of the long time that has elapsed since cholecystectomy, only one of the thirty-two patients traced later developed common duct stone.

SUMMARY

1. When the gallbladder is removed or destroyed, the remaining extrahepatic bile ducts generally dilate to several times their normal size, and the sphincter at the ampulla becomes incompetent. So far as can be estimated, the resultant physiologic changes are of little, if any, consequence.

2. One of the causes for the continuation or the recurrence of symptoms after the removal of the gallbladder is a stone in the common duct. Usually a stone in the duct can be located and removed, but occasionally one may pass up into the intrahepatic ducts and unavoidably be overlooked.

3. Symptoms may continue for a time after an operation on the gallbladder because of the accumulation of mucus in the ducts. Colicky attacks of this origin may occur for two or three weeks before they finally subside.

4. Changes in the bile ducts resulting from removal of a gallbladder which was not entirely functionless may be the cause of symptoms very similar to the original hepatic colic. It has seemed to us that some of the persistent symptoms following gallbladder operations may be due to such changes.

5. The continuation or the recurrence of symptoms in twenty-four cases in which we reoperated was probably due to infection in the pancreas or liver or both. The expectant diagnosis was common duct stone, but no stone was present and there was no evidence of one having passed. Most of these cases were permanently relieved by drainage of the duct.

6. In our review of forty-seven cases of stricture of the common duct we found only five in which the stricture may have been the result of necrosis or destruction of the mucous membrane of the duct, due to the presence of a stone. The gallbladder was operated on in all forty-seven cases, but the common duct was opened in only fifteen, so that a stricture of the duct resulted in the remaining thirty-two, following an operation on the gallbladder. In most instances, these strictures were probably due to technical difficulties and scar tissue. This condition will not occur so frequently in the future as in the past, because less abdominal drainage is being used.

7. From a study of the end-results in operations on the gallbladder, we believe that stones very rarely form in the common duct after the gallbladder has been removed. We have recently had reports from a considerable number of patients operated on more than twenty years ago, and in only one case is there any evidence that a stone occurred in the duct at any time after the operation on the gallbladder. In some of these cases stones were present in the ducts at the time of the original operation.

THE DIAGNOSIS AND MANAGEMENT OF STONES IN THE COMMON DUCT

REVIEW OF FIFTY CASES *

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In 273 operations on the gallbladder and ducts on 271 patients from 1917 to 1922, seventeen, or 6.2 per cent., had stone in the common duct. We have a list of thirty-three other operations for stone in the common duct prior to 1917. The mortality of the fifty patients was 10 per cent.

The average age was 52 years. The oldest patient was 77 years of age, and the youngest, 27 years. All the women were married, and 57 per cent. had one or more children.

In the registration area during 1918 there were 2,458 deaths from biliary calculi, of which 72 per cent. were women.

In our series, 36 per cent. had a history of typhoid fever, and 18 per cent. were treated for what they called "typhoid malaria." All the women in the series who had not borne children had had typhoid fever.

The duration of the symptoms was fourteen and eight-tenths years. It is remarkable how long these patients suffer before they bring themselves to operation. The stone, of course, was not in the duct all this time. The shortest duration of symptoms was one and one-half years, and the longest, forty-one years.

The onset began with the characteristic colic in 90 per cent. of the cases. Eight per cent. began with indigestion only.

The attacks of pain varied from six to 100 and in some cases there were long periods during which the patients were free from symptoms. All had attacks of pain in the upper right quadrant at some time during the illness. There were 45 per cent. who described the pain as a colic; 27 per cent., as cramping in character; 18 per cent., as a dull aching pain; and 10 per cent. of the patients had a sharp, cutting, knifelike pain. The pain radiated to the back in 45 per cent., to the shoulder in 64 per cent., and to the chest in 53 per cent. of the cases. In one instance only was there no radiation of pain whatsoever, and in one other case the patient described the pain as without radiation, but stated that it cut off her breath. The pain radiated to one or more of these places in many instances. In 90.7 per cent. of the cases the pain was severe enough to require morphin hypodermically for relief.

There was a history of chills in 81.1 per cent. of the cases. The chills varied from three or four to as many as 100 or more. Many of the patients had been treated for malaria without any benefit.

Fever of some degree occurred in practically all of the cases. Not all of these presented the characteristic steeple chart temperature.

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Jaundice of varying degree, from one to many attacks, occurred sometime during the illness of nearly 90 per cent.

There were 90.3 per cent. who had soreness and tenderness in the right upper quadrant which varied from an exquisite degree to a very slight tenderness which was hard to elicit.

More than half of the patients complained of indigestion between spells. There were two thirds who had lost both weight and strength. The greatest loss occurred in a woman, aged 45, who had lost 50 pounds (23 kg.) in eight months; another woman, aged 27, had lost 40 pounds (18 kg.) in a few months. The important point about these two cases was the differentiation from cancer, by the inconstant jaundice, coming and going, and the typical chills and fever and occurrence and radiation of pain .

At operation, the common duct was sometimes enormously dilated and completely filled with stones. The duct was dilated in the great majority of cases. Courvoisier's law, i. e., a contracted gallbladder from long antecedent cholecystitis with stones, was borne out in more than 70 per cent. of the cases. In nearly half of the cases the gallbladder contained stones also, and was removed for pathologic conditions, such as adhesions and fistulas in more than half. In some instances the dilated cystic duct after the removal of the gallbladder was utilized as a means of draining the common duct.

In operating for stones in the gallbladder, it is wise, in view of the danger of stone and infection, to open and explore the common duct whenever it is markedly dilated, whether one can palpate a stone or not. It is surprising how frequently small stones and thickened bile that would in all probability cause stones later will not be found unless the duct is exposed and drained. In a number of cases, the presence of white bile in the common duct was noted. Obstruction had been in existence a long time. In chronic stagnation, the bile pigment is absorbed and is replaced by the mucoid secretion, which has a clear rather than white appearance, but has been given the name of "white bile."

Intolerance of the gallbladder starts the stone in motion toward the common duct. The stones may or may not make a pause. If the stone is not so large that it causes a collection of bile behind it, then it may remain as quiet as in the gallbladder, not only for weeks but for months. It may suddenly disclose itself by colics, jaundice and fever. Then, as in cases of stones in the gallbladder, the advent of infection determines the severity of the case. A single stone may be so tightly wedged in the duct that not a drop of bile can pass it; it may fit so loosely or irregularly that the bile can readily flow by.

Complete occlusion of the duct is rare. A stricture or growth within the duct or tumor from without often produces it with a distended gallbladder. An acute obstruction of the common duct by stone is always complete. The stone allows no passage of bile, and during this time the obstruction is absolute and jaundice occurs rapidly; and, after attaining its maximum intensity, it remains and has only a slight degree of variation for a number of days or weeks, when it frequently clears up. The occlusion of the duct by stone rarely lasts over three months. By or before this time there are changes that occur in the duct, as thinning of the wall from pressure and possibly infection. This allows the stone to become loose. Cholangeitis with stone is characterized by rigor often preceded by colic, followed by rapid elevation of temperature and as sudden and rapid a fall, then a deepening of the jaundice, and later a lessening of the tinge.

In the vast majority of cases in which the stone produces a partial block, when the stone becomes fixed the duct behind it dilates, and its lumen attains the circumference of the finger or a larger size. The bile flows by the stone, which floats about in the dilated duct. It then resembles a ball-valve, at times blocking the duct absolutely, at other times allowing a flow of bile. No operation should be concluded until a careful search is made of the entire duct where a single stone is found. The dilatation of the duct may be very considerable. There is a specimen in Guy's Hospital Museum in which the common duct formed a thick walled cyst, 6 inches in diameter.

In only about 13 per cent. of cases (Courvoisier) with stone in the common duct is there any distention of the gallbladder. The gallbladder is usually found contracted, shriveled, thickened and, in the majority of cases, buried in dense adhesions. It would be a physical impossibility to distend the gallbladder. Pressure on the common duct from the outside, as in cancer of the head of the pancreas, causes distention of the gallbladder.

The symptoms of stone in the common duct are often trivial and entirely wanting at times. Stones are found in the common duct when the symptoms are wholly lacking—the so-called silent stone. The stone may be small and fit so loosely in the duct that there may be no obstructions or cholangeitis. Occasionally, one finds a stone lying quietly in a diverticulum-like pouch of the duct.

The pain, when present, is either dull or colicky in character, occurring in spasmodic attacks, accompanied by a rigor or chill, followed by elevation of temperature that rapidly runs up to 102, 103 or 104 F., and as suddenly drops to normal. This temperature angle is quite characteristic, and has been designated as the "angle of a cholangic infection." It has a characteristic "steeple" form, as there is a rapid rise and fall with each attack. In the succeeding hours, jaundice appears which gradually deepens in its tinge. Following an attack, the patient feels well while the jaundice recedes; then the fever again appears. This syndrome, called the "intermittent hepatic fever of Charcot," is often incorrectly diagnosed as malaria. It is infectious and is produced by the movement of the stone, and is similar to the urethral chill and fever following instrumentation.

The variation of the jaundice is quite characteristic of chronic obstruction of the common duct. Thus, one finds naturally the stools at one time brown and at another time gray; the urine now dark then clear. If the attacks of jaundice increase, the skin assumes a grayish green tinge that is quite characteristic. Itching of the skin is most constant and sometime intolerable.

The complication of suppurative cholangeitis is a rare but often fatal one. Abscess or abscesses of the liver are denoted by a temperature that remains steadily high, with severe and uncontrollable chills.

The pain in obstruction of the common duct by stone is almost never absent. In obstruction by tumor, pain is rare, but we have been misled by pain and the presence of fever in two cases of malignancy. In obstruction by tumor, jaundice is very intense, dark, mahogany-like, seldom variable, and stools are constantly clay colored. Kehr says that his clinic attendant would often say: "There is a patient here with

jaundice. He hasn't gall stone, only cancer." Painless jaundice that is intense, dark and unvarying in an elderly person, lasting over two months, is usually cancer of the head of the pancreas. It is almost constantly associated with a distended gallbladder. Catarrhal jaundice runs its painless course in six or seven weeks, and should be waited on without impatience. The duodenal tube (Lyons method) seems to add little that is practical to the other methods of examination. The importance of the roentgen ray as a method of detecting these stones is not inconsiderable. Ten out of our last series of seventeen patients were roentgenographed. In eight of the ten, the roentgen-ray report as to the presence of stones was found to be correct. This is a small roentgen-ray series, but the roentgen ray has a valuable corroborative method in obscure cases. All roentgen-ray reports must be taken, of course, in connection with the history and physical findings.

More and more the evidence points to the blood stream as the chief agent in infection in the bile passages. Judd called attention, some years ago, to the fact that the "strawberry gallbladder" is a type of cholecystitis seldom associated with calculi. Gallstones are not infrequently found in gallbladders that are normal in appearance, and cultures of the contents of the bladder are sterile; but a culture from the walls of the gallbladder may reveal *Streptococcus viridans*.

A small stone blocking the ampulla will divert bile and infection into the duct of Wirsung, and establish an acute hemorrhagic pancreatitis with its consequent fat necrosis, which is a mortal complication in the average case.

The common duct cases, then, are the late and neglected cases. The mortality is considerably greater, about ten times greater than for stones in the gallbladder. At the Mayo Clinic it was 8.6 per cent. In dealing with common duct cases one is dealing indirectly with the liver, whereas in gallbladder stone the liver is a thing apart.

An animal can live only a few hours after excision of the liver, at the longest eight hours. Crile and his co-workers have called attention to the very close relation between the brain and the liver. The brain cannot function in the absence of the liver. The cells in the brain rapidly disintegrate within an hour after excision of the liver; the electric conductivity of the brain is opposed to that of the liver; that is, when the electric conductivity of the brain is increased, that of the liver is decreased. The liver was found to have the highest temperature of any organ in the normal body. After complete ligation of the liver, the temperature of the brain begins to fall immediately and continues to fall until death. The length of life after excision of the liver was equivalent to the length of time an animal can live under ether anesthesia. Apparently the brain cannot function or survive after the liver ceases to function. In common duct stone, the liver function is necessarily interfered with. With jaundice there is back pressure on the liver and stagnation of bile. This means a circulatory congestion, a swollen liver with its internal respiration impaired. The same thing occurs in nephritis: the kidneys are swollen, congested and inflamed, and the internal respiration of their cells is damaged. In these cases, however, we have an accurate method of measuring and establishing the impairment of the vital renal function by means of blood chemistry, an estimation of the phenolsulphonephthalein output.

Recently, Rosenfield and Schneiders brought out a test for liver function. Phenoltetrachlorphthalein is the dye used intravenously. It is excreted in the normal individual almost entirely by the liver. The blood serum is examined, and the amount of dye estimated by means of colorimetry. Rosenthal demonstrated that, if the liver did not function, the dye would be found in the blood stream, which in color would equal 10 mg. of dye in 100 c.c. of water. This is the 100 per cent. standard. He has further shown, in a series of demonstrations in normal cases, that the liver will remove all but 3 to 7 per cent. of the dye in fifteen minutes, and in an hour the blood stream is free of the dye. This test of liver function, in a series of cases of toxemias of pregnancy, proved itself very efficient as an index of the vital liver function. In cases of common duct obstruction, it is of considerable importance as an indicator of how much surgery the patient will stand.

The management of common duct stone is a delicate and exacting matter, compelling all the surgeon's judgment, experience and intrepidity. Common duct obstruction is analogous to obstruction at the neck of the urinary bladder due to prostatic hypertrophy. In both cases there is a partial or complete obstruction to evacuation of vital secretions, which gradually impairs the functions of these organs on which life depends. It has been indubitably demonstrated, in cases of prostatic hypertrophy, that mortality in operations on the prostate is due to impaired renal function. This principle holds in common duct stone, namely, that a good or bad issue depends on the degree of impairment of liver function. The surgery of these two conditions is very similar. In advanced cases of both types the removal of the stone or the prostate is not of surgical importance, nor can it be done except with grave risk. On the other hand, the urgent requirement is the relief of obstruction. It is safer to do a two stage operation in these dehydrated and jaundiced cases of common duct stone in the first instance, simply draining the gallbladder or duct above the stone, as advocated by Crile, allowing the liver free drainage; and, when the jaundice has subsided and the congestion and swollen liver returned to normal, the second operation for removal of the stone can be safely done. This fractional method is applied to the acute group of cases of jaundice with infection of severe grade. When to use it depends on the operator's judgment. There are many factors that will enable one to decide the condition of the patient, the degree of jaundice and its duration, as well as the clotting time of the blood and the phenoltetrachlorphthalein test. Jaundiced patients are apt to bleed at any time after the operation for at least ten or twelve days, especially if clotting time is above nine minutes. The bleeding may occur from the wound, the gastro-intestinal tract, the nose or any mucous membrane. It generally takes the form of oozing. It may be most difficult to control The coagulability of the blood should be brought within as normal limits as possible prior to any type of operation.

Walters of the Mayo Clinic studied the causes of death in patients with obstructive jaundice at the time of operation. He found that more than 50 per cent. of the patients who died and who had obstructive jaundice at operation died of intra-abdominal hemorrhage, whereas, among those who were not jaundiced but died after operation, intra-abdominal hemorrhage occurred in only 6 per cent. It is essential also to determine the calcium time of the blood, which represents the time

required for 1 c.c. of blood to clot in a test tube in the presence of 6 drops of a 5 per cent. solution of calcium chlorid. The calcium time will be lower than the time required for the blood alone to clot. Lee and Vincent have shown that the clotting time of the blood can be lowered to the calcium time by doses of calcium lactate taken by mouth each day for three days. Bile pigment in the blood is toxic to the patient, but it becomes less toxic when combined with calcium (King and Stewart). Calcium has its best effect when administered intravenously. It is not readily absorbed from the intestinal tract. Walters reports the intravenous injection each day for three days of from 5 to 10 c.c. of a 10 per cent. solution of calcium chlorid. The coagulation time of the blood is apt to rise in a few days after the operation and the patient bleed as a late complication. Large amounts of water are essential for the patient, and it has been found that carbohydrates preserve the proteins of the body during a state of toxemia. These patients should be fed large quantities of sugar.

Transfusion may also be done to lower the clotting time, to reduce the toxemia and to combat oozing.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. JUDD AND HAGGARD

DR. GATEWOOD, Chicago: Among 500 consecutive cholelithiasis cases in which operation was performed, I found fifty-three, or 10.6 per cent., of common duct cases, a trifle higher percentage than Dr. Haggard reported. The mortality rate was 9.4 per cent., as compared with 10 per cent. in his series, and 8.6 per cent. in the Mayo series. Our oldest patient was 76, his 77; our youngest 23, his 27. Our typhoid and malaria statistics were not as high as Dr. Haggard's probably because he comes from a district in which these diseases are much more prevalent. It was a rather striking fact that, in nearly all of the common duct cases, the onset dated back a number of years. Almost all of our patients had been jaundiced at some time or other, although thirteen were not jaundiced at the time of operation. Dr. Haggard has so thoroughly covered the differential diagnosis that there is little to say. Exclusive of suggestive shadows which, taken in conjunction with the history, enable one to make a tentative diagnosis, only from 15 to 20 per cent. of our cases were positive from a roentgen-ray standpoint. We have often studied fluctuation of bile in the urine by placing single specimens in a row and noting the fluctuation from specimen to specimen. This fluctuation is even more important than the variation from day to day in differentiating malignancy with silent and ever increasing jaundice from gallstone obstruction. In regard to Dr. Judd's paper, it gives me considerable satisfaction to learn that other people have patients who have attacks of gallstone colic shortly after the removal of the gallbladder. I am inclined to attribute these attacks to an inflammatory process with spasm, though the possibility of a small stone being left behind must be considered. The rareness of the formation of stones in the common duct after cholecystectomy, which Dr. Judd mentioned, is very encouraging, because a number of men in the last few years have ceased to do cholecystectomy, believing that the resultant dilatation of the common duct was responsible for the later symptoms. The lesson to be learned is that early accurate diagnosis and treatment will reduce the mortality of common duct cases from 8 to 10 per cent. to from 1 to 3 per cent. that of cholecystectomy. Careful examination of the common duct should always be made at the time of cholecystectomy, regardless of the symptoms.

DR. A. S. LOBINGIER, Los Angeles: The seriousness of permanent obstruction of the common duct was impressed on me seventeen years ago by a case of a fixed calculus in the ampulla of Vater, and another one midway in the pancreatic groove. Because I lost this patient, it brought forcibly to my attention the advisability of doing this operation in two stages in those cases in which there was retention of bile with intense cholemia. Ever since that time I have drained the gallbladder, eliminated the cholemia and then treated the condition in the common duct. Robson called attention twenty years ago to the marked inflammatory change in the liver, and especially in the pancreas, from obstructed flow of bile. Usually a cholecystitis is associated with it. It is obvious that we should consider this subject from the standpoint of infection of the liver itself, and we shall have to go back to some of the clinical observations of the older writers and older clinicians who used vigorous cholagogues to get adequate drainage of the liver. The principle involved is one of drainage; drainage of a congested and chronically infected liver with the intralobular spaces resembling microscopically the change found in impairment of the right heart. Years ago, Babcock wrote of the serious deterioration of the myocardium in chronic cholecystitis. In addition to placing emphasis on the common occurrence of myocarditis in gallduct and liver infection. I should like to call attention to the fact that the musculature of the alimentary canal suffers in these cases to such a degree that it and the cardiac complex offer additional reasons for draining the liver through the gallducts. I wish to suggest a method of drainage of the liver and bile ducts whereby the gallbladder is resected 1½ inches from the common duct and a good, firm drain, a No. 24 rubber catheter, is fixed with chromic catgut into this stump of the gallbladder, and maintained for four weeks, the operation being preceded by a course of cholagogues and followed by proper treatment to stimulate the activity of the liver. I believe that by this method of drainage, which is very simple, we may do this operation very quickly and effectively, and that we shall accomplish very much more than we have in the past by draining the gallbladder alone or removing it without drainage of the cystic duct. Obviously, this technic, which embraces both cholecystostomy and cholecystectomy, is not applicable when the cystic duct is occluded.

DR. J. SHELTON HORSLEY, Richmond, Va.: I suppose that all of us who have had experience in gallbladder surgery, particularly surgery of the common duct, have had the embarrassing experiences suggested by the authors; that is, our patients have colicky pains occasionally of a somewhat similar character to the pain they suffered previously to operation. In explanation of the pain, stricture and recurring and persistent stones must be included. There is, however, as Dr. Judd pointed out, a group of cases in which we cannot account for the symptoms. Many of these, or possibly all, may be accounted for, as suggested by Graham and others, by assuming that there is a hepatitis with cholecystitis and that there is an exacerbation of this hepatitis which may cause symptoms. As to drainage of the gallbladder, I feel more and more convinced that it is unnecessary to drain the stump of the gallbladder after removal. Murat Willis has called attention to that. There is a little technic in carrying out this principle that is sometimes important and that may make it applicable in more cases. If one attempts to bury the stump of the cystic duct under the peritoneum, it is more likely to leak because, among other things, there is a tendency of these ducts to dilate after the gallbladder has been removed, as pointed out by Dr. Judd and Dr. Mann. If two ligatures are placed on the cystic duct and the ends of the distal ligature are left long, passed through some peritoneal covered fat, sometimes a tag of gastrocolic omentum, or sometimes a tag of great omentum, and tied, this brings peritoneal-covered fat over the stump of the cystic duct. In one case in which the gallbladder was removed by another operator, there was a recurrence of symptoms. I operated and found nothing wrong so far as the previous operation was concerned, but the common duct was greatly dilated. The common duct was opened and no stone could be found. I made an incision of about three-fourths inch in the common duct and the adjacent duodenum and sutured them together with a double row of tanned catgut. This is comparatively simple when there is a dilated duct. This patient recovered satisfactorily.

DR. R. C. COFFEY, Portland, Ore.: The common duct practically always dilates to a greater or less extent when the gallbladder has been removed or has become so diseased that it ceases to function. The question arises, Why does that

happen? It is possible and, indeed, very probable that the sphincter of Oddi has something to do with it, but we also know that this is not the only influence that has to do with the dilatation of the duct. For we know experimentally that when we implant the common duct directly into the intestine, the duct always dilates. We know, on the other hand, that if that duct is run along under the mucous membrane for a distance before it enters the lumen of the intestine, the duct does not dilate. As a fistula of the bile tract begins to close, the flow ceases in the daytime for some time before it ceases at night. Kehr called attention to this, and recommended feeding the patient frequently at night, to hurry up the closing of the duct. Terry has done the same thing to prevent dilatation of the common duct after cholecystectomy. Why is this? During active digestion, peristaltic waves are regularly passing down the intestine. In their wake is a relative lowering of pressure, permitting bile to go into the intestine intermittently. During the intervals of digestion, peristaltic waves are fewer and less vigorous, and static intra-intestinal pressure develops. Therefore, the outlet of the bile duct is more constantly closed when peristalsis is least. At least one important cause of the dilatation of the common duct is static intra-intestinal pressure during intervals of digestion.

DR. E. STARR JUDD, Rochester, Minn.: I want to mention one point particularly, and that is the cause of the dilatation of the common duct after the gallbladder has been removed. I think Oddi's sphincter is more of a factor than Dr. Coffey infers from his discussion. Years ago, in two series of experiments on dogs, we removed the gallbladder. In one of these series we removed the sphincter at the end of the duct in addition to doing a cholecystectomy. In none of these cases, uncomplicated by subsequent adhesions, did we get dilatation. I believe that the sphincter is a factor in the etiology of the dilatation that occurs after the gallbladder has been removed.

TREATMENT OF PULMONARY TUBERCULOSIS BY MEANS OF ARTIFICIAL PNEUMOTHORAX

OBSERVATIONS IN SIX HUNDRED CASES DURING TWELVE YEARS *

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The results here recorded are based on the observation of 600 cases of pulmonary tuberculosis in which an artificial pneumothorax has been performed during the last twelve years, with more than 12,000 inflations.

According to the classification of the National Tuberculosis Association, the material consisted of eighty-five cases of moderately advanced and 515 cases of far advanced pulmonary tuberculosis, no patients in the early stages having been subjected to treatment. Thus, it will be seen that we have been very conservative in our selection of material.

We have classified this material into eight main clinicopathologic groups:

GROUP 1.—*Fibrocaseous tuberculosis.* This group consisted of 194 cases of a progressive character in which little or no excavation was demonstrable. Sixty-five cases were moderately advanced, and 129 were far advanced.

GROUP 2.—*Fibrocaseous cavernous tuberculosis.* This group consisted of 177 cases of the advanced type of tuberculosis, in all of which cavities were demonstrable by physical diagnostic or roentgenologic procedures.

GROUP 3.—*Fibrocaseous cavernous tuberculosis with cavity manifestations in the foreground.* This group includes fifty-two cases wherein the cavity manifestations were in the foreground, enormous excavation of lung tissue having taken place, leaving cavities so large that one could not hope for closure by ordinary cicatricial contractions.

GROUP 4.—*Severe acute infiltrating type of tuberculosis, caseous-pneumonic and caseous bronchopneumonic forms.* This group includes thirty-nine cases of a very acute, rapidly advancing type of disease characterized by extensive invasion, associated with a violent symptom complex.

GROUP 5.—*Tuberculous pleuritis with effusion.* In this group, we have included twenty cases of exudative pleurisy wherein the clinical history and the physical and roentgenologic examinations clearly indicated an unquestionably tuberculous involvement of the underlying lung parenchyma. We withheld from pneumothorax treatment all patients with the simple exudative variety of pleurisy.

GROUP 6.—*Severe and uncontrollable hemoptysis.* In this group, we have included four cases in which a pneumothorax was necessitated primarily because of severe and uncontrollable bleeding. Our records show that seventy-nine patients had hemoptysis shortly before or immediately preceding treatment. In many cases the bleeding was severe, but we were able to classify the pathologic condition in all cases, except the four included in this group, because the critical condition of the patients precluded thorough examination, and the bleeding demanded a pneumothorax at once.

GROUP 7.—*Bilateral fibrocaseous cavernous tuberculosis.* In this group we have placed thirty cases which presented demonstrable cavities in both lungs.

There was a well founded reason for instituting pneumothorax in all of these cases, because of the possibility that a successful compression of the worse diseased side would offer the patient a better chance for improvement or recovery. Great caution was exercised in the selection of material in this group, and in each case the pneumothorax was delayed until activity in the opposite lung had largely subsided, leaving mostly only the presence of the cavity to fear. Of course, there always existed the danger of exacerbation of disease in the opposite lung, but the compression was carried out with this danger constantly in mind.

GROUP 8.—*Desolate bilateral or "ultimum refugium."* In this group, consisting of eighty-four cases, we have placed our desolate and most hopeless cases, in which a pneumothorax was instituted purely as a therapeutic procedure. In all these cases a pneumothorax was not performed with the idea of accomplishing a cure but rather for the purpose of controlling severe symptoms and prolonging life.

Few patients with pulmonary tuberculosis, diseased to the extent of demanding an artificial pneumothorax, are wholly free from invasion in the opposite lung. A study of our records reveals that out of 453 patients with the fibrocaseous and fibrocaseous cavernous types of disease, 356 had disease in the opposite lung, demonstrable by physical diagnostic or roentgenologic procedures. In 253 cases, the disease amounted to fibrocaseous infiltrations or disseminated bronchogenic extensions.

Estimation of the value of any procedure in the treatment of pulmonary tuberculosis must be based, not only on its immediate influence, but also on the ultimate result after the lapse of a reasonable length of time.

Obviously, it would be unfair to compare the number of patients alive today who were treated ten years ago with the number alive today who were treated two years ago, if for no other reason than that of the natural mortality of disease in general, and of tuberculosis in particular.

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* Read before the Section on Practice of Medicine at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

* Owing to lack of space, a table summarizing results has been omitted. The complete article appears in the transactions of the Section and in the author's reprints.

In order to reduce the error to a minimum and to enable us to compare the results of treatment of one period with that of any other period, we have divided our study into three epochs of four years each: 1911-1914, 1915-1918 and 1919-1922.

In referring to our summary of end-results, it will be noted that in comparing the number of patients "clinically well' in the epoch 1915-1918 with 1919-1922, our percentage of cures in the latter epoch is considerably smaller than in that of the former. This is explained because of the fact that no patients have been checked as "clinically well" in the 1919-1922 epoch who received treatment later than Jan. 1, 1921, as we have felt that the patient must have remained clinically well for at least one year before he can be so considered. For that reason, these cases have been designated only as arrested ambulant.

Realization of the notorious inaccuracy of statistics led us, at the very beginning of our work, to accumulate and record information regarding all pneumothorax patients. Throughout our work, we have endeavored to maintain contact with all cases, and this has been facilitated because of the fact that few were of the migratory consumptive type, the vast majority being permanent residents of the Northwest.

In order to complete our records, we sent questionnaires to all patients in this series concerning whom there was doubt regarding their present status. When no replies were received, their condition was tabulated as of the time of their disappearance, but none of them were given a better rating than "favorably influenced." Cases were excluded wherein the period of treatment or observation was so brief that reliable conclusions were impossible.

We have not made use of the term "apparently cured" in recording end-results, all cases of this type being considered only as arrested ambulant.

In our final analysis, we again reviewed in detail all records pertaining to each case, including the reexamination of approximately 5,000 roentgenograms and orthodiagrams. We feel, therefore, that these statistics are as accurate as it is possible for us to present.

The end-results of pneumothorax therapy are so intimately associated with, if not actually dependent on, the character of compression that we have tabulated our end-results according to whether the compression was satisfactory, partial or unsatisfactory, or no free pleural space was found.

By "satisfactory compression" we mean that a sufficient degree of compression of diseased lung tissue has been produced which, if maintained, according to our experience, would render the compressed lung, as a source of any symptom, improbable.

We prefer the term "satisfactory compression" to "total collapse" in defining the degree of compression for the reason that a satisfactory compression by no means involves a total collapse of the lung; for, in some instances, even though the lung is compressed only a few inches from the chest wall, it may nevertheless be a satisfactory compression.

Under the term "partial compression" we have placed all cases wherein a satisfactory compression was unattainable. Thus, it is seen that, even though an almost total collapse of the lung is produced, if we were unable thereby satisfactorily to compress diseased lung tissue or to close cavities because of the presence of adhesions, the case was placed in the "partial compression" group for the obvious reason that the degree of compression was not satisfactory.

In connection with "no free pleural space," no explanation is necessary except that cases have not been placed in this class until repeated attempts over all lobes of the lung proved the absence of free pleural space. We have included cases in which there was no free pleural space, since they serve as an excellent control because, aside from the fact that these patients received no compression, their treatment was identical to that given in the compressed cases.

Realizing the great importance of sanatorium education and observation, we have not accepted any patients for pneumothorax treatment unless they were willing to submit to an initial period of sanatorium care. The period of sanatorium treatment was reduced to the utmost minimum compatible with safety, patients being discharged to ambulant care at the earliest possible time. Ambulant treatment and observation in every case was carried on as long as possible, at times under the most unfavorable circumstances, as the vast majority of patients were compelled to early resumption of occupational activities.

DURATION OF PNEUMOTHORAX TREATMENT

It has been our policy to continue pneumothorax treatment as long as possible; and, while the most favorable results are associated with a satisfactory compression over a prolonged period, we have seen good results in cases wherein the period of compression was relatively short.

Of our satisfactory compressions:

Twenty-seven per cent. of the patients received pneumothorax treatment less than six months.

Fourteen per cent. received pneumothorax treatment less than one year.

Fifty-nine per cent. received pneumothorax treatment for one year or more, many of the latter having received pneumothorax treatment as long as five or six years.

Of our partial compressions:

Sixty per cent. received pneumothorax treatment less than six months.

Twenty-seven per cent. received pneumothorax treatment from six months to one year.

Thirteen per cent. received pneumothorax treatment for one year or more.

TOTAL DURATION OF OBSERVATION

Of our satisfactory compressions:

Twenty-nine per cent. were under observation less than one year.

Twenty-four per cent. were under observation from one to two years.

Forty-seven per cent. were under observation from two years to twelve years.

Of our partial compressions:

Sixty per cent. were under observation less than one year.

Twenty-five per cent. were under observation from one to two years.

Fifteen per cent. were under observation for two years or more.

Of our no free pleural space patients:

Fifty-eight per cent. were under observation less than one year.

Twenty-three per cent. were under observation from one to two years.

Nineteen per cent. were under observation for two years or more.

Of the 600 cases selected for treatment:

There were satisfactory compressions in 235.
There were partial compressions in 245.
There was no free pleural space in 120.

It will be noted that these figures bear the approximate ratio of 2:2:1. If this is borne in mind, it will greatly facilitate the study of the summary table.

Inflation was attempted or carried out on the right side in 300 cases and on the left side in 286 cases.

There were fourteen cases in which the compression was bilateral.

The reader is referred to Table 1 for a summary of end-results, as the text will not allow of a detailed discussion.

COMPARISON OF END-RESULTS UNDER THE DIFFERENT DEGREES OF COMPRESSION

Of our 600 patients, 149 are clinically well; eighty-four are arrested ambulant; 274 are dead. The remaining cases were either favorably influenced, temporarily improved or unimproved.

Of the 149 clinically well, 114 were satisfactory compressions; twenty-eight were partial compressions, and seven had no free pleural space.

Of the eighty-four arrested ambulant cases, forty-four were satisfactory compressions; twenty-nine were partial compressions, and in eleven there was no free pleural space.

Of the 274 fatal cases, fifty-two were satisfactory compressions; 142 were partial compressions, and in eighty there was no free pleural space.

Of the 235 patients who had satisfactory compressions, 114 are clinically well; forty-four are arrested ambulant, and fifty-two are dead. The remaining number were either favorably influenced, temporarily improved or unimproved.

Of the 245 patients who had partial compressions, twenty-eight are clinically well; twenty-nine are arrested ambulant, and 142 are dead. The remaining number were either favorably influenced, temporarily improved or unimproved.

Of the 120 no free pleural space (control patients), seven are clinically well; eleven are arrested ambulant, and eighty are dead. The remaining number were unimproved.

While a partial pneumothorax is not attended with entirely satisfactory end-results, it is productive of very beneficial influences, since it holds the disease in abeyance, and prevents extension. It is also of value in ameliorating or relieving troublesome symptoms. It might be inferred from a study of the end-results of partial compression that the procedure is of little permanent value; but a comparative study of the results in our control cases in which no free pleural space was found will show that a partial compression is of unquestionable value; for, against 15.5 per cent. clinically well in the partial compression group, there are only 5.5 per cent. clinically well in the no free pleural space group. Furthermore, a study of our records shows that our end-results from partial compression have been unfavorably influenced by reason of the fact that we have been obliged to include fifty-six partial compressions performed for therapeutic purposes only in the desolate bilateral group, of which forty-nine died. We have also included seventeen partial compressions in the severe acute infiltrating types of tuberculosis in which thirteen deaths occurred, and twelve partial compressions in the bilateral fibrocaseous cavernous tuberculosis group, in which seven deaths occurred.

INFLUENCE ON FEVER

In the 235 satisfactory compressions, 203 patients were febrile before treatment, and 152 patients became afebrile.

In 245 partial compressions, 224 patients were febrile before treatment, and seventy-eight patients became afebrile.

In the no free pleural space group, 110 patients were febrile before treatment, and thirty-four patients became afebrile.

INFLUENCE ON SPUTUM

Of 235 satisfactory compressions, 176 patients had positive sputum before treatment, and fifty-three had positive sputum after treatment.

Of 245 partial compressions, 227 patients had positive sputum before treatment, and 170 had positive sputum after treatment.

Of 120 no free pleural space (control cases), 111 had positive sputum before treatment, and ninety-four had positive sputum after treatment.

The striking influence of a satisfactory compression on positive sputum is apparent from a comparison with the control cases in which no free pleural space was found: After treatment in 218 cases, the sputum was negative after concentration. Of this number, 147 were satisfactory compressions, fifty-four were partial compressions, and in seventeen there was no free pleural space.

OBSERVATIONS CONCERNING THE STATUS OF THE CONTRALATERAL LUNG

In spite of the fact that many observers contend that a pneumothorax is contraindicated in cases presenting more than minimal traces of disease in the other lung,

TABLE 2.—*End-Results in Four Hundred and Twenty-Three Cases of Fibrocaseous and Fibrocaseous Cavernous Tuberculosis Tabulated in Accordance with the "Status of the Contralateral Lung"*

Status of Contralateral Lung	Character of Compression	Number of Patients	Clinically Well	Arrested Ambulant	Unimproved	Dead
Essentially negative, 97 cases	Satisfactory	56	29	11	3	8
	Partial	25	10	1	4	6
	No free pleural space	16	4	1	3	9
Deep peribronchial infiltration, 106 cases	Satisfactory	49	24	0	0	10
	Partial	33	3	6	6	20
	No free pleural space	21	1	8	8	8
Disseminated bronchogenic caseous infiltration, 40 cases	Satisfactory	15	4	2	2	5
	Partial	21	1	4	4	14
	No free pleural space	4	0	1	1	3
Active fibrocaseous infiltration, 134 cases	Satisfactory	50	24	11	5	11
	Partial	59	4	12	12	27
	No free pleural space	25	0	3	3	19
Quiescent fibrocaseous infiltration, 49 cases	Satisfactory	21	10	1	1	4
	Partial	16	4	4	4	6
	No free pleural space	12	2	4	4	4

we feel certain that a study of Table 2 will, in part, dispel this belief. If all patients are denied pneumothorax treatment because of the mere presence of disease in the opposite lung, some of them will be deprived of a valuable procedure which offers in many instances the possibility of a complete cure or, at least, an arrestment of their disease.

Many types of pathologic change may coexist in the lung opposite the compressed side, but in this table, for statistical purposes, we have classified the contralateral lung according to the dominant type.

Our observation concerning disease in the lung opposite the compressed side has convinced us that fibrocaseous lesions involving the upper portion of the lung offer a more favorable prognosis than the disseminated bronchogenic extensions into the lower half of the lung.

Our records show that we have obtained some excellent results in many cases wherein active disease extended from the apex to the third rib in front and the spine of the scapula behind. This disease was characterized by the presence of abundant resonating or crackling râles either on deep inspiration or expiratory cough, and its presence was confirmed by roentgenograms. Yet, in spite of this disease, a compression of the worse diseased side has been accomplished, and we have noted a steady improvement, leading to complete recovery.

If one has to deal with a very active process in the contralateral lung, it is better to allow this activity to subside somewhat before instituting pneumothorax treatment; but this delay always involves the danger of adhesions forming, rendering a pneumothorax impossible. We have eliminated this danger in many of our cases by introducing only sufficient gas to separate the lung from the chest wall, and maintaining this very slight degree of compression, in the meantime observing the behavior of the opposite lung.

We cannot too strongly emphasize the importance of careful and constant observation of the contralateral lung during the whole course of pneumothorax treatment, in order to detect the earliest manifestations of progression of disease or fresh invasion.

OBSERVATIONS ON COMPLICATIONS AND CAUSES OF PNEUMOTHORAX FAILURE

No study of the end-results in the treatment of tuberculosis by means of artificial pneumothorax would be complete without due consideration of the actual causes of pneumothorax failure, as many deaths might be attributed to the therapeutic failure of a pneumothorax when, in reality, the failure of pneumothorax treatment was caused by other factors. In analyzing our records, we find that the 194 compression fatal cases fall into two groups, those which were improved but fatal, eighty-seven cases, and those which were progressively fatal, 107 cases.

In order to arrive at a decision regarding the cause of failure, we have made a careful analysis of each case record, and have ascribed failure to that factor which we considered the real and essential one.

The scope of this paper will not permit of a detailed analysis of the causes of failure or complications developing under treatment, but a summary can be procured from a reference to Table 1. It will be noted that very few patients are recorded as having developed tuberculous laryngitis, tuberculous enteritis, and extension or progression of disease in the contralateral lung during treatment.

It must be emphasized that complications recorded as developing under treatment apply only to those which developed during the actual period of pneumothorax treatment, and we therefore have not recorded those cases in which these complications developed after the termination of the pneumothorax treatment. This applies particularly to those cases of the favorably influenced, temporarily improved and unimproved groups in which treatment was abandoned. Many of these patients already had a tuberculous laryngitis or enteritis, and in others the period of pneumothorax treatment was so short that these complications had scarcely time to develop. Many patients undoubtedly developed a terminal progression or extension of disease after suspension of pneumothorax treatment, but they have also been excluded.

Since the "no free pleural space" patients received no compression, no complications are recorded as having developed under pneumothorax treatment except "pleural shock and gas embolism."

TUBERCULOUS LARYNGITIS, ENTERITIS AND OTHER TUBERCULOUS COMPLICATIONS

In spite of the fact that ninety-four patients on whom compression was performed had a well defined tuberculous laryngitis before treatment, it was the cause of pneumothorax failure in only one case. According to our experience, tuberculous laryngitis does not contraindicate pneumothorax treatment unless it is so severe as to interfere with the proper nourishment of the patient. On the contrary, improvement of a tuberculous laryngitis almost invariably takes place, along with improvement of the lung, and is often dependent on it. Tuberculous enteritis is a much more serious complication, and it is questionable whether any patient should be subjected to an artificial pneumothorax who has an enteritis so severe as to interfere with proper nutrition.

In seventy of our compression cases, a well defined symptom complex of tuberculous enteritis was presented, and its presence was confirmed by physical diagnostic or roentgenologic methods. In seventeen of our compression cases, it was a cause of pneumothorax failure.

GAS EMBOLISM AND PLEURAL SHOCK

In more than 12,000 inflations, we have had four cases presenting the symptom complex usually attributed to gas embolism, two of which were fatal. We have observed in fifteen cases the symptom complex usually attributed to pleural shock, none of which were fatal.

SEROUS EXUDATE

In eighty-three of our 480 compression cases, a serous exudate developed in amounts of 50 c.c. or more. We believe that nearly all patients develop an exudate at some time during their pneumothorax treatment, but the quantity may be so small as to escape recognition unless especially sought.

The exudate may fill only a portion of the pleural sinus; it may be transitory in character, lasting only a few days, and it may be productive of no clinical symptoms. Serous exudates may frequently follow the separation of adhesions. The mere presence of gas in the pleural cavity acting as a foreign body is sufficient to produce an exudate.

TUBERCULOUS EMPYEMA

There were fifty-nine cases of tuberculous empyema in our 480 compression cases. This number included some patients who presented themselves with a tuberculous empyema associated with a spontaneous pneumothorax, and also includes all those cases which early in our work we designated as "sterile empyema." Our observations during recent years have convinced us that nearly all of these purulent exudates are tuberculous in character, and we have been able to demonstrate this fact by animal inoculations. Tuberculous empyema usually arises from tearing a portion of the lung cortex in an effort to separate adhesions, from ulceration of a superficial caseated focus into the pneumothorax cavity, or from spontaneous pneumothorax into the pneumothorax cavity. It is important to aspirate a tuberculous empyema early and often, supplemented by irrigation, if necessary. Tube drainage should never be resorted to unless all other measures fail; and, in case of this

necessity, the drainage should be air tight, and an effort should be made to expand the lung as quickly as possible.

SPONTANEOUS PNEUMOTHORAX

In our series of 480 compression cases, sixteen patients developed a spontaneous pneumothorax into the pneumothorax cavity, and it was a cause of pneumothorax failure in three cases.

Spontaneous pneumothorax or lung perforation into the pneumothorax cavity occurs with greater frequency than is generally recognized, for the reason that some cases are not productive of symptoms, and in others the symptoms are so mild that they are attributed to other causes.

The perforation may be so small as to permit of only a slow leak of air into the pneumothorax cavity, which may not cause any subjective symptoms. The symptoms are largely dependent on the size of the pneumothorax cavity, the presence or absence of adhesions or exudate, and the size and character of the perforation, i. e., whether of the valve type or not.

Lung perforation may arise as a result of any condition that suddenly produces a great increase in the intrapleural pressure, particularly coughing paroxysms or physical strain. Two of our patients ruptured the lung following coughing, and four during or after physical strain. Two of these ruptures occurred while the patient was straining at stool.

Of our fifty-nine cases of tuberculous empyema, we resorted to air tight tube drainage with constant suction under slight negative pressure in five cases, with two complete recoveries and three deaths. Three other patients who developed their empyema while away from our observation were operated on by the ordinary open method and died. Three additional patients were also operated on by other surgeons by the open method and are still living, but will require radical thoracoplastic procedures to obliterate the pneumothorax cavity.

HEMOPTYSIS

Hemoptysis was present preceding or shortly before pneumothorax treatment in eighty-two cases. It developed during treatment in ten cases. Aspiration tuberculosis, as a result of hemoptysis, followed in four cases, and it was a cause of failure in two instances.

Sudden death due to postpneumothorax hemorrhage was the cause of failure in one case, the source of the hemorrhage being unknown.

EXTENSION OF DISEASE IN CONTRALATERAL LUNG

We have employed the term "extension of disease" only with reference to invasion of the "essentially negative" contralateral lung during compression of the other side, whereas the term "progression of disease" is applied to those cases wherein there was an exacerbation of disease already present in the contralateral lung. Thus, the former represents extension to the nondiseased contralateral lung, and the latter, progression in the already diseased contralateral lung. Our records show that we designated the "status of the contralateral lung" as "essentially negative" in 107 compression cases. Extension of disease to the contralateral lung occurred as a complication in four instances, but was not a cause of failure in any case.

PROGRESSION OF DISEASE IN THE CONTRALATERAL LUNG

In 480 compression cases, 282 of the patients had demonstrable disease in the opposite lung; yet a progression of this disease took place in only thirty-five cases during the actual period of pneumothorax treatment. Undoubtedly, a minor progression took place in other cases, particularly early in the treatment; but the limitation of diagnostic procedures is such that it is not always possible to detect the minor or questionable degrees of progression in an already diseased area, particularly if it is deep seated. But in the thirty-five cases referred to, it was of such an unquestionable character that a discontinuance of pneumothorax treatment was necessitated, and it was a cause of pneumothorax failure in twenty-two cases.

Progression of disease undoubtedly took place in many cases after treatment was abandoned, particularly in the unimproved or progressively fatal group; but these cases are not included. The "no free pleural space" cases are excluded for the reason that no pneumothorax treatment was given.

Postpneumothorax progression of disease in the compressed lung was the cause of pneumothorax failure in three cases. All these patients had been in excellent condition for several years.

These cases are not to be confused with that type of progression which occurs as a result of one's inability to maintain compression, wherein progression takes place coincident with or shortly after reexpansion, as these patients seldom become more than favorably influenced or temporarily improved.

Postpneumothorax reactivation of disease in the contralateral lung took place in ten patients who had remained clinically well or arrested ambulant for periods varying from four to six years.

EARLY OBLITERATIVE PNEUMOTHORAX

Obliterative changes develop sooner or later in all compression cases under ordinary circumstances, the time required for its completion varying within a wide range. We have been successful in maintaining compression in some cases for periods in excess of six years.

A study of our records shows that of 245 partial compressions, in 149 the pneumothorax was maintained for less than six months; yet even these short periods of inflation have been productive of beneficial results. These cases are not, however, designated as early obliterative pneumothorax because the obliterative process took place in the usual manner. In twenty-one cases, however, it took place with such unusual rapidity that we have classed them as early obliterative pneumothorax. It was the cause of pneumothorax failure in two cases.

ADHESIONS

Adhesions proved to be the greatest obstacle in establishing a satisfactory compression. In 120 cases, the adhesions were of such a character that after repeated attempts we found no free pleural space. In 245 cases, we were able to establish only a partial compression on account of the presence of adhesions; and even in our satisfactory compressions, adhesions were encountered in a great majority of the cases; but their character did not prevent the establishment of a satisfactory compression.

As a result of our observations, we believe that no tuberculous lung, diseased to the extent of demanding a pneumothorax, is wholly free from adhesions. They are almost invariably present over cavities, attaching the diseased lung to the chest wall in varying degrees of fixation.

Adhesions may be encountered and cause interruption of compression at any phase of pneumothorax treatment, and it is impossible always to foretell their

presence. The only absolute proof of their existence is the fact of having encountered them during the course of inflation or attempted inflation. When they are encountered and are preventing satisfactory compression, treatment should be energetically carried on by very frequent inflations, caution being exercised to avoid too high pressures. By this means, they are often separated or stretched, permitting satisfactory compression; or an obliterative pneumothorax is combated by maintenance of a sufficient pressure.

A careful study of roentgenograms shows that nearly all of our patients with upper lobe tuberculosis had apical adhesions. In many instances, we were able to effect a separation or to strech them into long bands, so that they did not interfere with a satisfactory compression; but in some cases they were so firm that separation or stretching could not be accomplished, and even though a good compression was apparently present, a study of stereoscopic plates revealed that the upper portion of the lung was only flattened against the upper mediastinum. Thus, cavities were only pressed into an elongated form, the apical adhesions not permitting of their contraction.

INTERCURRENT DISEASE

It is important that we include intercurrent disease in our causes of pneumothorax failure, since intercurrent disease or other extraneous causes not related to tuberculosis was responsible for twelve of our deaths. Most of these patients were clinically well. Nevertheless, we have been obliged to record them as dead, although by so doing it has influenced our pneumothorax end-results in an unfavorable manner, to the extent of twelve fatalities.

UNFAVORABLE SOCIAL AND ECONOMIC CONDITIONS

In the group of unfavorable social and economic conditions it was necessary to include twelve cases wherein an excellent pneumothorax result was accomplished during sanatorium treatment. These patients were afterward obliged to live under very unsatisfactory social and economic conditions, and for financial reasons they had to resume household or industrial activities long before they were able to do so.

VOLUNTARY ABANDONMENT OF TREATMENT

In the group in which treatment was abandoned voluntarily we have placed ten cases wherein an excellent pneumothorax result was being attained, which was defeated by reason of the fact that some of these patients discharged themselves from treatment, believing that they were cured. Other patients, because of their good general appearance, were convinced by friends or relatives that further treatment was unnecessary.

WIDESPREAD CHARACTER OF DISEASE

"Widespread character of disease" is an enticing term which one might employ with great satisfaction to cover up many causes of pneumothorax failure. We have ascribed only three of our failures in the improved but fatal group to this cause, although we were justified in many other instances in its use.

In the 187 progressively fatal cases, we attributed our pneumothorax failure to the widespread character of disease in fifty-eight instances, forty-two of which belonged to the desolate bilateral or ultimum refugium group, six to the bilateral fibrocaseous cavernous group, and seven to the acute infiltrating group.

CONCLUSIONS

The artificial pneumothorax method of treatment of pulmonary tuberculosis is an exceedingly valuable procedure.

The value of the method is demonstrated by comparing the results of treatment in satisfactory compression with those in which there is no free pleural space, the latter serving as controls, because the treatment was otherwise the same.

The success of the method is largely dependent on the character of compression.

The presence of disease in the opposite lung does not always contraindicate compression of the worse diseased side.

ABSTRACT OF DISCUSSION

DR. F. M. POTTENGER, Monrovia, Calif.: Had Dr. Matson only included in his report the cases which in his estimation had been treated as long as necessary, his results would have been even better. The method of reporting results in tuberculosis is very unfair. It includes in statistics patients who are treated only a short time; consequently, it does not show the curability of the disease. Pneumothorax should not be considered a cure for tuberculosis. I do not find it indicated except in a very small group of cases, but my patients are in an institution under ideal conditions, and most of them can remain sufficiently long to secure a result. Any patient who can get a result without pneumothorax is better off than one who has had his lung compressed. It is difficult to know when to let the lung expand; consequently, some lungs are kept compressed for several years. I consider the indication for pneumothorax treatment an advancing caseous process in spite of treatment that is being carried on, if confined to one lung—the other being in fairly good condition; or a cavity which fails to wall off sufficiently with ordinary treatment. Fibrosis interferes greatly with compression, and defeats the purpose in most cases of thick walled cavities. I am sure that many clinicians compress when compression is unnecessary. The late Dr. John B. Murphy stated that in early cases the lung should be compressed. I am emphatically opposed to this opinion. I believe that pneumothorax should be reserved for severe cases, and not cases in which the patient will recover without it. Such suggestion should be combated by all tuberculosis workers, because nearly all early cases will end in recovery without it if treated long enough and under proper circumstances. I do not believe that one can compare the cases that compress readily with those that do not compress readily. Normally, when destruction takes place, with contracting and lessening of lung tissue in one part, there is an enlargement of the lung in other portions to fill the chest cavity. Such compensation can take place freely only in case the lung is unbound by adhesions. When dense adhesions exist, compensation is thwarted and healing interfered with. There are certain accidents, such as pleural shock, pleural effusion, pleural infection, and rupture of cavity walls, which always interfere, to a certain extent, with the desirability of the procedure. One should give the tuberculous patient every chance to get well, using every means at hand that will help; and if, in spite of this, extension takes place, and it is confined largely to one lung, or if cavities continue forming, then collapsing should be tried.

DR. WILLIAM C. VOORSANGER, San Francisco: I am an ardent believer in the efficacy of pneumothorax in a certain class of cases. My experience dates back to 1912. I am doing pneumothorax in 8 per cent. of my cases. The indications for pneumothorax should be fairly concise. We do not want to perform pneumothorax on any patient who is doing well. When a patient continues to have fever, and continues to expectorate and get worse generally, that diseased lung should be compressed, and within a few weeks, sometimes within a week there is a rapid improvement, attributable only to the compression. Compression is carrying out, to a high degree, rest of the lung. If a cavity has no adhesions around it, the compression is simple. But cavities are not

always simple. When should compression be released? Dr. Matson has shown us cases in which compression was employed for years. At Santa Barbara one physician reported two compressions that lasted twelve years, but both those patients were physicians. I find it very difficult to keep patients over a certain length of time. But one can, even if one compresses only for a few months, often get a definite result. Sometimes it is good practice, when patients are clinically well to stop compressing and see what happens if that lung expands. If symptoms reappear, compression can be continued. As to partial compression: There is another form of partial compression for cases of infiltrated lung and numerous adhesions. If a certain amount of air can be injected into a certain space, and that lung is partially compressed, sometimes cessation of symptoms results. It is true that one cannot accomplish a cure in a case of that kind; but when the patient has been for a year getting worse, particularly with a cough and an accumulation of sputum, one can, by injecting 50 or 75 c.c. into the chest, separate a portion of the lung from the chest wall and compress, often accomplishing an excellent result, as far as the limitation of symptoms is concerned. As to the time to compress, I do not believe in too much compression. My own practice is to give a patient plenty of time to improve. He may do very well clinically. If he is progressing, there is no necessity to collapse further. If, however, he is not improving, collapse should be begun promptly and kept up.

DR. WALTER A. GRIFFIN, Sharon, Mass.: I began to use this treatment in the first year that Drs. Floyd and Robinson brought it to the attention of the profession in Boston. I remember distinctly the first case. Shortly after the administration of the anesthetic, the patient felt the fear of death and became absolutely blanched. Whether that was due to a sensitive pleura, or whether it was due to some epinephrin gaining entrance to a vein, I cannot say. Another danger that I have never heard mentioned is this: We had a patient, a young woman, on whom we tried the ordinary dietetic treatment for two or three months, but with persistent elevation of temperature and marked lesion on the right side. We finally decided to do an artificial pneumothorax. Good compression was obtained and continued for two or three months. The patient was up and about and feeling very well. One day she reminded me that her time for compression was up, and I promised to give her a refill on the next day. Immediately after breakfast on that day the nurse asked me to see this patient. I found her sitting up in bed, gasping, spitting up a frothy, reddish sputum. Under vigorous stimulation, very little help was obtained. In desperation I put in a needle and drew off a small amount of fluid and a little gas, and although she felt somewhat better for a few minutes, she died within the hour. Dr. Frank Mallory performed the necropsy. The heart was perfect; the kidneys were perfect, but there was an acute edema of the lung. As to the time of stopping the refilling, there is no definite rule to guide us. I am continuing the refills much longer than I did at first, and I feel sure that some of my early failures would have been successes if I had continued for a longer period.

DR. W. R. P. CLARK, San Francisco: Dr. Pottenger stated that the percentage of compression cases in his practice was about from 1 to 3, and Dr. Voorsanger said 8 per cent. I should like to ask Dr. Matson what proportion of his cases he thinks require pneumothorax.

DR. RAY W. MATSON, Portland, Ore.: Dr. Pottenger has stated that he does not believe that an artificial pneumothorax should be tried until all other methods of treatment have been exhausted, and that if sanatorium treatment is carried out long enough the results would be equally good without subjecting the patient to an artificial pneumothorax. Early in our work, it was our practice to subject a patient to artificial pneumothorax treatment only after all other measures had failed; in other words, only as a last resort. All patients reported on in this series received sanatorium treatment, and many of them had been under observation for one year or more before it was decided to resort to artificial pneumothorax. The delay in treatment in many cases was very costly, because when we were obliged to resort to an artificial pneumothorax, we were unable to introduce gas because of the formation of adhesions. Of recent years, we have felt that if, after a brief period of observation, any doubt exists regarding the favorable outcome by ordinary hygienic and dietetic measures, the patient should immediately be subjected to pneumothorax therapy if no contraindications exist. Dr. Pottenger objected to pneumothorax therapy because of the inability to know how long the treatment should be continued. The same question naturally arises in any method of treatment of pulmonary tuberculosis. One must be guided by medical judgment and experience. In pneumothorax therapy, we continue treatment when possible until an obliterative pneumothorax ensues. Dr. Pottenger objected to the use of the "no free pleural space" cases as controls because of the assumption that their opportunities for recovery were already lessened by the presence of dense pleuritic adhesions, causing retraction of mediastinal contents, etc. However, cases of this sort were not used as a control for the reason that the examination alone would fairly definitely establish the uselessness of even attempting an artificial pneumothorax. Our "no free pleural space" cases represent that group of cases wherein neither the physical nor the roentgenologic examination established the presence of adhesions which would preclude the possibility of establishing a pneumothorax. Their presence was established only by the fact of having attempted to separate the lung from the chest wall and failed. In answer to Dr. Clark's question, I would state that the 600 cases reported represent the pneumothorax material selected from approximately 7,000 cases of pulmonary tuberculosis and represents, therefore, about 8.5 per cent.

SPIROCHETAL PULMONARY GANGRENE*

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Evidence is accumulating that pulmonary gangrene may be caused by spirochetes and fusiform bacilli aspirated from an unclean mouth, and that it may be prevented by proper oral hygienic measures. Furthermore, when the condition is once established, diagnosis can be made early by finding the organisms in the washed sputum, thus offering an opportunity for successful specific treatment with arsenic.

Little attention was paid to the possible etiologic relationship of spirochetes to bronchopulmonary lesions until 1906, when Castellani reported from India two cases of hemorrhagic bronchitis simulating pulmonary tuberculosis but caused by spirochetes. To the condition he gave the name bronchial spirochetosis. A year before, Rona, in Germany, in a report concerning spirochetes and fusiform bacilli, included a postmortem study of two cases of pulmonary gangrene; in one, numerous spirochetes and fusiform bacilli were found, and in the other, sections of the gangrenous lung showed many fusiform baccilli. In this communication Rona stated his belief that material from carious teeth reaching the bronchi can bring about pulmonary gangrene. Since the publication of these reports, considerable discussion has been raised concerning the specificity of the spirochetes in these cases. Many observers support Castellani and consider them different varieties of one species and believe that they inhabit only the deeper air passages. Others, however, since Rona's report, have felt that bronchopulmonary gangrene may be caused by various spirochetes together with fusiform

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bacilli aspirated from gingival, dental, tonsillar or other mouth lesions.

Since the publications mentioned above, many cases of bronchopulmonary spirochetosis have been reported from Europe and the tropics. In the United States, however, including four cases observed at Lakeside Hospital, Cleveland, and three studied previously,[1] only twenty-four cases of bronchopulmonary spirochetosis have thus far been reported.[2] Clinically, some of twenty-four cases in the United States were at first confused with tuberculosis, abscess, and bronchopneumonia or lobar pneumonia. The sputum in some was jelly-like and blood-tinged, in some hemorrhagic, in some purulent, and in others brown and foul smelling. In only one of these cases did the sputum show tubercle bacilli. It always contained, however, numerous spirochetes varying considerably in morphology and sometimes associated with fusiform bacilli. Recovery was reported in the majority. The disease occurred somewhat more frequently in males, the patients ranging in age from 4 to 76 years.

CASES OBSERVED AT LAKESIDE HOSPITAL

CASE 1.—*Clinical Record.*—A man, aged 40, was admitted from the dispensary with a diagnosis of lung abscess, which had probably been present for about five weeks. The onset of the disease had been very gradual, and he had continued to work several days, although quite ill. He remained away from work only after he found he was so weak that he could hardly get home. The second day at home he began to cough and spit up a foul, yellow material, which later became profuse, darker in color, and fetid. He remained in bed two weeks, and then was up and about the house but unable to work. The week previous to admission his feet began to swell, and his physician sent him to the hospital for examination.

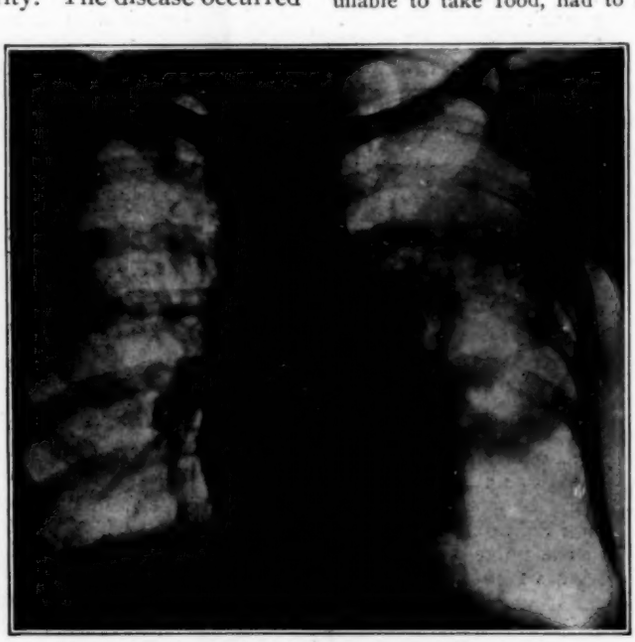

Fig. 1 (Case 1).—Signs of excavation in middle of left lung.

He had a normal temperature on admission, which promptly rose to 39 on the second day. The respirations were 20; the systolic blood pressure was 100; the diastolic, 60; the urine was negative. The leukocyte count was 10,000. A differential count showed 57 per cent. polymorphonuclears, 30 per cent. lymphocytes, 3 per cent. large mononuclears, and 10 per cent. transitionals. The sputum showed no acid-fast bacilli but many pus cells. There were few organisms, and no predominating one was determined. With Fontana stain a few fusiform bacilli and spirochetes were found. At the angle of the left scapula there was a small region of dulness, with high-pitched breathing and crepitant râles. Both lower extremities were edematous, but no satisfactory explanation for this edema was found. He continued to have a temperature ranging between 39 and 40 C. (102 and 104 F.) until his twentieth day in the hospital, when he died. The leukocyte counts were never below 10,000, and never above 23,000. Bronchoscopic examination, the day after admission, revealed pus coming from the main bronchus on the left side. No granulations or abscess cavity could be made out, and no quantity of pus was evacuated. On the seventh day of the disease it was seen that the dulness in the lower left lobe had increased in area, and the patient was in no way improved. A roentgenogram made at this time showed a large area of dense infiltration in the central portion of the left lung, with excavation in the center of the density, probably an abscess. At this time washed sputum with Fontana stain showed Vincent's spirilla and fusiform bacilli.

The patient was given neo-arsphenamin (January 27, 0.75 gm.; February 4, 0.6 gm.; February 8, 0.6 gm.; February 13, 0.6 gm.) and potassium iodid. Previously to this he had been having turpentine inhalations and creosote in capsules. He was forced to assume a posture suitable for draining the abscess four times a day, and blocks were also put under the foot of the bed for drainage of the abscess.

On the twenty-first day of the disease, the lung signs had changed but little except that there were diffuse râles all through the left lung. There were signs of excavation, but no single large cavity could be defined. The patient was unable to take food, had to be fed with a tube, and rapidly lost strength. On the eleventh day of the disease he had very distinct clubbing of the finger nails, which was more marked on the day of his death. He died apparently from exhaustion and intoxication.

The correct diagnosis in this case was promptly made by finding spirochetes and fusiform bacilli in the washed sputum, with the Fontana stain. The specific treatment, although very vigorously employed, did not improve this patient, probably because the lesion was too far advanced when treatment was begun.

Pathologic Record.—The anatomic diagnosis was: pyorrhea alveolaris (spirochetes and fusiform bacilli the predominating organisms); aspiration pneumonia, left lower lobe (in part organized); spirochetal pulmonary gangrene with cavity in left lower and left upper lobe (12 cm. in diameter); scars in left myocardium; streptococcus (hemolytic) septicemia; cloudy swelling of the parenchymatous organs; cardiac dilatation right, moderate; terminal pulmonary edema, slight.

Of importance in the necropsy were: The buccal cavity. Several teeth were gone from the lower jaw; a number of those present showed erosions; the gums were covered by a moderate amount of slimy, cheesy material, smears from which showed innumerable spirochetes, fusiform bacilli and other organisms. The spirochetes varied considerably in morphology, but the majority were of the Vincent type.

Left lung. On section, there was a striking picture. Involving the upper portion of the lower lobe and the lower portion of the upper lobe, there was a cavity about 12 cm. in diameter, filled with penetratingly foul-smelling, thin, greenish-brown fluid. The wall of the cavity in the upper lobe was apparently composed of recently consolidated lung, which in places was distinctly necrotic and greenish. The wall of the cavity in the lower lobe was made up in part of firmer tissue, apparently chronic granulation tissue. The inner wall here, however, was apparently necrotic, in part yellowish and in part green. There were numerous tags of necrotic greenish lung tissue, with free ends in the cavity. A considerable portion of the upper lobe laterally was edematous, and toward the cavity apparently consolidated. The lower lobe below the cavity

1. Kline, B. S.: Spirochetal Pulmonary Gangrene, J. A. M. A. **77**: 1874 (Dec. 10) 1921 (reference to seventeen cases).
2. Dick, G. F.: J. Infect. Dis. **12**: 191, 1913. Mason, V. R.: Bull. Johns Hopkins Hosp. **31**: 435 (Dec.) 1920. Davis, D. J., and Pilot, Isadore: Studies of Bacillus Fusiformis and Vincent's Spirochete, J. A. M. A. **79**: 944 (Sept. 16) 1922.

was fairly well aerated, the surface dry and pink. The bronchial branches terminated in the gangrenous cavity, and showed in the neighborhood swelling and injection of the mucosa, which in addition was brownish to green. Smears from the fluid in the gangrenous cavity showed innumerable spirochetes, fusiform bacilli and other bacilli. Those made directly from the necrotic wall showed similar organisms. Histologically, the picture was that described in previous cases. The gangrenous tissue, stained by the Levaditi method, showed in places innumerable spirochetes.

CASE 2.—*Clinical Record.*—A man, aged 55, was admitted in the third week of his illness, which started from an injury causing severe contusions of the thorax. He complained of cough, pain in the chest, fever and a profuse yellow sputum. His temperature was 39.5 C. (103 F.), with moderate dyspnea and no cyanosis. The leukocyte count was 26,000. The sputum was not fetid but purulent, and contained a few organisms not definitely described. There was much dulness in the left lower chest, with greatly diminished breath sounds and fremitus, but no precise signs of fluid. On the third day of hospitalization, an exploratory puncture revealed a few cubic centimeters of blood and pus, with numerous cocci. The diagnosis then was bronchopneumonia secondary to trauma. On the fifth day there were signs of a small pneumothorax without displacement of the heart, which might be interpreted as excavation with bronchial fistula. Exploratory puncture on this day showed 50 c.c. of thin, watery fluid containing 200 cells per cubic millimeter, largely mononuclear, with no odor and no organisms. On the eighth day, signs of pneumothorax were present, and 500 c.c. of gassy fluid was obtained, which contained 500,000 cells per cubic millimeter, polymorphonuclears predominating. Very large gram-positive bacilli were present, and a Fontana stained preparation showed numerous spirochetes and fusiform bacilli. During this time the temperature fluctuated between normal and 39.5, and the sputum became more profuse and very fetid. The eighth day, on discovery of this purulent fluid, a rib resection was performed and a large amount of purulent material evacuated. From this time until the seventieth day, he was treated with hypochlorite irrigation in a large cavity at the base of the thorax. During all this time he had profuse, purulent expectoration, and on the forty-eighth day developed bronchial fistula, which prevented further irrigation. On the fiftieth day he was found to have signs of consolidation in the right anterior upper chest, but on exploration with a good sized needle only minute amounts of thick, fetid pus could be recovered. On the sixtieth day, swelling was discovered under the clavicle, where the needle had been previously inserted, and a fluctuant, air-containing cavity was found underneath the pectoralis. When he coughed, this cavity would distend and then empty itself of air. The patient volunteered the information that, when this pouch emptied itself of air, there would be drainage from the resection wound. At this time he had a very septic temperature, ranging from 40 C. (104 F.) to normal, and a leukocytosis of 20,000. On the seventieth day, tubercle bacilli were found in the sputum, and on the seventy-first day the patient died, apparently from sepsis with accompanying emaciation and exhaustion.

Fig. 2 (Case 1).—Pulmonary gangrene.

The spirochetes and fusiform bacilli were found in this case after the pleural fluid had become fetid. Diagnosis could have been made earlier, perhaps, if smears of the fluid had been stained by the Fontana method. It is also likely that infection of the pleura took place much earlier than was discovered—the physical signs were difficult to interpret early in the course of the condition. In this case the gangrenous process extended along the course of the paracentesis wounds as far as the subcutaneous tissues, a point to be remembered as an indication against puncturing the pleura in cases of this kind.

Pathologic Record.—The anatomic diagnosis was: dental caries (spirochetes and fusiform bacilli the predominating organisms); extensive peribronchial pneumonia and bronchopneumonia of the right lung, in part organizing, in part tuberculous, with gangrenous ulceration (spirochetal pulmonary gangrene), most marked in the right upper lobe; proliferative tuberculosis and gangrenous ulceration overlying pleura and chest wall from the second to the fourth ribs, inclusive; subacute bronchitis marked with old pleural and pulmonary tuberculosis, bilateral; thoracostomy wound, right; pyopneumothorax, right; anemia and emaciation, moderate; cloudy swelling of the parenchymatous organs; terminal cardiac dilatation, right.

Of importance in the necropsy were: The mouth. The teeth showed worn cutting edges, and a few were gone from each jaw. A few of the remaining teeth showed erosions and small cavities, with dark greenish, foul-smelling contents. This was especially true of one molar in the upper right jaw, which showed about half a dozen erosions and small cavities. A smear from material in these showed innumerable spirochetes and fusiform bacilli, together with other organisms. The spirochetes in general were of the Vincent type.

Right chest wall. When the skin of the right chest was stripped back, the intercostal muscles in the right upper anterior chest, between the second and fourth ribs, showed striking greenish-brown necrosis, and the tissue was penetratingly foul-smelling. A gangrenous process was observed extending through the chest wall, through the pleura into the lung. About 50 c.c. of thin, slightly viscid, brownish green fluid was expressed from several openings in the intercostal muscles. A smear of this fluid showed innumerable spirochetes, the majority of which were of the Vincent type, and fusiform bacilli.

Lung. The pleura of the right lung was greatly thickened, in places 5 mm. thick. Especially over the lower lobe there were irregular openings extending into the underlying lung. In these areas a thin, greenish fluid was observed. Section of this lung gave a striking picture. There was considerable coal pigment in all lobes, with almost adjoining firm gray areas, each several millimeters in diameter. In addition, there were several cavities in the upper lobe, the largest 4 cm. in diameter, the inner walls of each apparently necrotic, in

places reddish, yellowish or greenish. In the cavities there was brownish-green necrotic material and fluid having a penetratingly foul odor. In places in the upper lobe toward the pleura, associated with dense scarring, there were numerous groups of yellowish flecks, which did not project above the general level. A smear made from a small cavity with a necrotic yellowish inner wall showed innumerable spirochetes (the majority of the Vincent type), fusiform bacilli and other organisms. In the upper lobe, some of the cavities communicated with one another; in places, they reached to the pleura. In the lower lobe there was much less ulceration, and most of this was toward the inferior surface. In all lobes on this side there were small, grayish yellow nodules suggesting tubercles and tuberculous lymph nodes. A smear from an area of consolidation in the right lung showed, in addition to a moderate number of spirochetes, fusiform bacilli and other organisms, a moderate number of acid-fast bacilli, apparently tubercle bacilli. Sections of gangrenous lung stained by the Levaditi method showed in places innumerable spirochetes. Histologically, in addition to the picture presented in the cases previously reported, there were areas of proliferative tuberculosis involving the lung pleura and the chest wall.

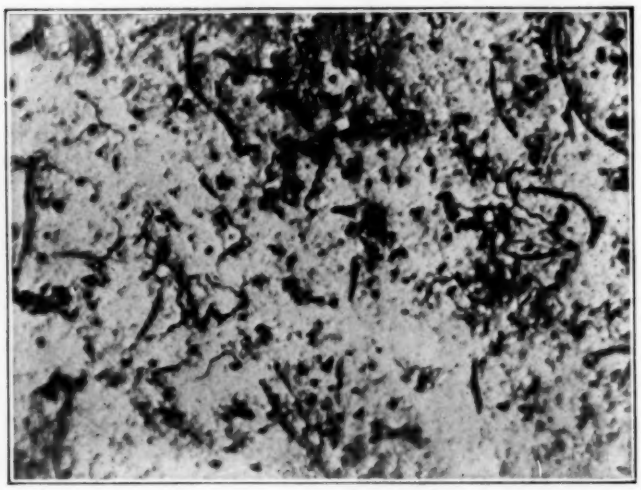

Fig. 3 (Case 1).—Spirochetes and fusiform bacilli in smear from pulmonary gangrene.

CASE 3.—*Clinical Record.*—A man, aged 55, became ill in the midst of a "raisin jack" spree, but it was learned that he had been sick for five days, beginning with a chill and fever. He promptly developed cough and bloody sputum, and had pain in the chest. A physician who saw him on the fifth day diagnosed his condition as lobar pneumonia, and sent him to the hospital. His temperature was 39 C. (102.2 F.); the respirations were labored, 28 a minute, with an expiratory grunt. He was slightly cyanotic, and had a leukocytosis of 54,000. The sputum was bloody and somewhat rusty, and contained pus cells and numerous gram-positive diplococci. The urine was normal. A differential count was done two days after admission, when the leukocytosis was 32,000, and showed 78 per cent. polymorphonuclears, 16 per cent. lymphocytes, 2 per cent. eosinophils and 1 per cent. myelocytes. He was found to have consolidation of the entire right lower lobe and part of the middle lobe. Next day, there were numerous râles at the base on the opposite side, and evidence of a plugged bronchus on the side originally involved. The temperature gradually subsided, going below normal on the sixth day, but continuing at times above 38 C. (100.4 F.). It became practically normal on the eleventh day, and fluctuated between normal and 38 until his death on the thirtieth day in the hospital. On the sixth day, the sputum became brownish, developed a very foul odor, and when stained by the Fontana stain showed the predominating organisms to be a fusiform bacillus and spirochetes of the Vincent type. There was also present Friedländer's pneumobacillus, *Micrococcus catarrhalis*, and a very motile, gram-positive bacillus.

On the thirteenth day of the disease, the patient was given 0.4 gm. of neo-arsphenamin intravenously, another injection ten days later, and a third injection three days after that. He was also given during the entire time 1 grain (0.065 gm.) of sodium cacodylate three times a day, which developed a definite garlic odor in his breath. The man continued to be in remarkably good condition and apparently comfortable for thirty days. On the twenty-fourth day, definite signs of excavation could be made out in the right axillary region, but no large accumulation of fluid could be located. The roentgen-ray diagnosis was: hydropneumothorax with pleural adhesions in the right chest; partial collapse of the middle and lower lobe and consolidation of part, probably the middle lobe.

In spite of evidence of extensive destruction of the lung, severe cough and profuse purulent sputum, the man looked remarkably well until the thirtieth day of his disease, when he suddenly started to bleed profusely from the mouth while sitting up in bed, and died apparently from hemorrhage. Necropsy was not granted.

It is possible that this patient started his illness with true lobar pneumonia, and that this was promptly followed by a secondary invasion of spirochetes and fusiform bacilli and other mouth organisms which caused the gangrene. The appearance of a brown, fetid sputum suggested the true diagnosis, and Fontana stained preparations proved it.

CASE 4.—*Clinical Record.*—A man, aged 33, was admitted on the first day of his illness, complaining of chills, fever, and pleurisy in the right chest. He gave a history of having had a cold for two weeks. On admission, he had a fever of 39 C. (102.2 F.) with rapid pulse, moderate cyanosis and cough, but no sputum. He had marked dental caries, and a few days later innumerable spirochetes and fusiform bacilli were found in a smear of a dental plug. There was consolidation of the right lower lobe. There was a leukocytosis of 22,000. The diagnosis on admission was lobar pneumonia.

The fever gradually diminished until it touched normal on the sixth day of hospitalization, but was at 39 C. or above every day previous to that. No sputum could be obtained and the blood cultures were negative, so that it was impossible to determine the type of pneumonia. On the eighth day of the disease he was found with signs of fluid, and an exploratory puncture was made, which yielded 100 c.c. of a fluid that was greenish, translucent and slightly turbid, with 528 cells per cubic millimeter, polymorphonuclears predominating. No organisms were discovered. On the thirteenth day of the disease there was evidence of a greater amount of fluid, and 150 c.c. of greenish, turbid, purulent fluid was obtained. Smears of this fluid, stained by the Fontana method, showed many spirochetes and innumerable fusiform bacilli. A rib was at once resected under a local anesthetic, and a large amount of thin, foul, watery pus was evacuated. He was equipped with a closed system of drainage, and irrigated with surgical solution of chlorinated soda (Dakin's solution). He had a normal temperature on the thirty-ninth day in the hospital, and was able to be up on the forty-ninth day. At his own request, on the one hundredth day of the disease, he was discharged with a small sinus.

Fig. 4 (Case 2).—Gangrene of lung, pleura and chest wall.

It is not possible in this case to state with certainty in what way the pleura became infected by mouth organisms.

From the course of events, it seems reasonable to assume that the spirochetes and fusiform bacilli were aspirated into the lung from the mouth either with or after the organisms causing the pneumonia, and that they later gained access to the regional pleura.

COMMENT

In all probability there have been, and are, many unrecognized cases of bronchopulmonary spirochetosis

Fig. 5 (Case 3).—Patient in horizontal position, showing hydropneumothorax with pleural adhesions and small cavity of right lung.

in the United States. The fact that the organisms are poorly stained by the usual laboratory methods and do not grow in the usual laboratory mediums may account for the failure in the past to observe them. The condition is readily confused with tuberculosis, abscess, bronchopneumonia or lobar pneumonia. The most important single diagnostic sign clinically is the sputum. This varies considerably in gross appearance. It may be jelly-like and blood-tinged; it may be hemorrhagic, purulent, or necrotic and brown. Ordinarily, the sputum has a foul odor, which, when well developed, is suggestive of the true diagnosis. In all cases, preparations stained by the Fontana method show the characteristic spirochetes and fusiform bacilli. Furthermore, in these cases similar spirochetes and fusiform bacilli are found in lesions of the mouth, most commonly dental caries and pyorrhea alveolaris.

The hypothesis that pulmonary gangrene may be brought about by spirochetes and fusiform bacilli aspirated from an unclean mouth acting on previously damaged lung parenchyma is further supported by the fact that the organisms in the sputum and in the human pulmonary lesion produce gangrene when injected into traumatized tissues of animals.[3]

Concerning the treatment, since the use of arsenic is usually so promptly and uniformly successful in superficial ulcerative lesions due to Vincent's spirilla and fusiform bacilli, it is indicated in cases of spirochetal pulmonary gangrene as soon as the condition is recognized. From the results of arsenic treatment in the cases reported above, however, the impression is gained that little benefit can be expected if lesions are far advanced when treatment is begun.

3. Kline, B. S.: J. Infect. Dis., to be published.

CONCLUSIONS

1. The presence in large numbers of spirochetes and fusiform bacilli in washed sputum of four cases of pulmonary gangrene suggests their etiologic relationship. These spirochetes vary morphologically, the majority, however, being of the Vincent type.

2. In all four cases, marked dental caries or pyorrhea alveolaris was present. Smears from these lesions showed organisms indistinguishable from those mentioned above.

3. These organisms, which are poorly colored by the usual laboratory stains, are readily demonstrated by the Fontana method in smears, and by the Levaditi method in tissues.

4. The chief and usually earliest diagnostic sign in these cases is the sputum, which varies somewhat in gross characters, usually being foul-smelling, and always containing spirochetes and fusiform bacilli.

5. From a study of these four cases, the impression is gained that they are extensive pneumonias caused by organisms from the unclean mouth in which gangrenous ulceration occurs because of activity of the aspirated spirochetes and fusiform bacilli.

6. If the foregoing explanation is correct, this type of spirochetal pulmonary gangrene may be prevented by proper oral hygienic measures.

THE EFFECT OF PASSIVE HYPEREMIA OF THE LIVER ON TUBERCLE FORMATION *

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Clinicians have frequently observed that patients with a passive congestion in the lung due either to a heart condition, or resulting from a pulmonary condition, rarely develop clinical evidences of tuberculosis. A recent exposition of this view was put forward by Sewall,[1] who described patients with labile vasomotor systems as well as with symptoms of neurasthenia. On physical and roentgen-ray examination, these patients reveal slight sclerosis of the hilum lymph nodes and upper bronchial radiations. These findings, Sewall asserts, are due to a "subtle intoxication" by the tubercle bacillus; they are nonprogressive, and most of the subjects of this toxemia never develop clinical tuberculosis.

Passive congestion in the lungs may result from a variety of clinical conditions. Very commonly, pulmonary irritation may occur in the form of bronchitis due to a degeneration in some part of the circulatory system. The lung vessels become engorged and the surface epithelial cells infiltrated. In long standing irritation, especially in the more advanced cases of congestion, interstitial changes occur, taking the form of engorged capillaries, hemorrhagic infarctions, appear-

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1. Sewall, H.: Occult Tuberculosis, Am. Rev. Tubere. 3: 665 (Jan.) 1920.

ance of pigmented cells in the sputum, and the formation of fibrotic changes in the lung.

Extensive pulmonary changes which may be confused with pneumonia frequently follow infarctions, which may be the result of emboli from the heart and veins, or following abdominal or pelvic operations.

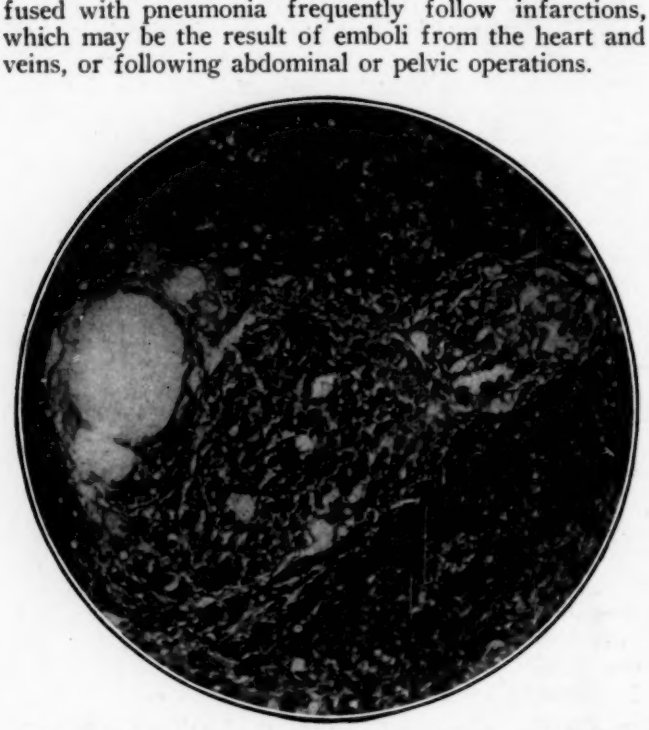

Fig. 1.—Liver of control animal, showing tubercle with beginning caseation (hematoxylin-eosin; slightly reduced from a photomicrograph of 130 magnification).

Depending on the demand and the strength of the heart muscle, a diminished circulatory force may cause lung alterations which vary from slight passive congestion to structural changes and edema. Pritchard and Mortensen [2] have observed that in mitral stenosis the pulmonary changes are marked, and it is in this particular type of case that the fibrotic changes are most likely to appear in pulmonary tuberculosis. With mitral insufficiency, the pulmonary changes are, as a rule, more insidious and more liable to go from the congestive stage to edema, omitting the fibrotic type of pathologic change.

Of the diseases which have at one time or another been considered predisposing to phthisis, those affecting the respiratory tract are nearly always mentioned, the most common being bronchiectasis, syphilis, actinomycosis, cancer of the lungs and chronic pneumonia, which prepare a favorable soil for the growth of the tubercle bacilli. Pure lobar pneumonia is hardly ever followed by phthisis and, in most cases in which it was said to have occurred, the probabilities are that the primary disease was an acute pneumonic phthisis which had subsided and followed the course of chronic tuberculosis.

The relation of pulmonary emphysema and asthma to pulmonary tuberculosis is of interest. Rokitansky was of the opinion that pulmonary emphysema and tuberculosis occupy a relationship of mutual exclusion. Brügelmann has observed that as long as one has asthma one is immune to tuberculosis. Hoffman [3] considers an emphysematous lung distinctly unfavorable soil for the development of tuberculosis. Fishberg is of the opinion that true bronchial asthma is only rarely complicated by pulmonary tuberculosis.

The reasons why asthma and emphysema are some protection against tuberculosis are not clear. Some of the opinions are that the atrophic condition of the pulmonary parenchyma renders it unfavorable for the growth of the tubercle bacilli, or that the inspiratory current is slow and inadequate, and the bacilli are prevented from entering the deeper portions of the lung.

Fishberg [4] suggests that perhaps the venous hyperemia, which is present in most cases of emphysema, prevents the development of tuberculosis as certain forms of heart diseases do.

Diseases of the heart have more or less had some relationship to the development of tuberculosis. Thus it was observed that a large and hypertrophied heart appears to a certain extent a protection against the development of phthisis. Rokitansky [5] asserted that diseases of the heart and blood vessels producing passive congestion of the lungs are a preventive of phthisis; this condition is seen particularly in the cases of valvular diseases, especially of the left side of the heart. Traube and Fagge are of the opinion that only stenosis excludes tuberculosis, while in aortic diseases tuberculosis is occasionally encountered. Fagge's postmortem record shows four cases in the course of thirty years, while Kidd's statistics of the incidence of mitral stenosis is one case in 500. The postmortem statistics of the incidence of valvular heart lesions are numerous and cannot be gone into in detail in this paper.

Osler, among others, has observed that all forms of congenital heart disease predispose to tuberculosis, particularly stenosis of the pulmonary artery. Mitral

Fig. 2.—Liver of control animal, showing a very slight formation of fibrous tissue around the tubercle (Mallory stain; slightly reduced from a photomicrograph of 100 magnification).

stenosis, on the other hand, has a distinctly inhibitory influence on tuberculosis.

Rokitansky attributed the apparent antagonism between mitral sclerosis and active tuberculosis to the venous stasis in the lungs, which appears to have an

2. Pritchard, J. S., and Mortensen, M. A.: Pulmonary Findings Due to Circulatory Changes, Am. Rev. Tuberc. 4: 620 (Oct.) 1920.
3. Hoffman, F. A., in Nathnagel's Practice, Diseases of Lungs, etc., 1903, p. 241.
4. Fishberg, Maurice: Pulmonary Tuberculosis, Lea and Febiger, 1916.
5. Rokitansky: Handbuch der pathologischen Anatomie 2: 520, 1844.

inhibiting effect on tuberculosis. Walsh [6] has observed that decompensation and active tuberculosis do not run concurrently; cases of tuberculosis of the lungs with marked arteriosclerosis show great resistance to the advance of tuberculosis, and, as a rule, great curative ability. Weiss [7] is of the opinion that in mitral stenosis

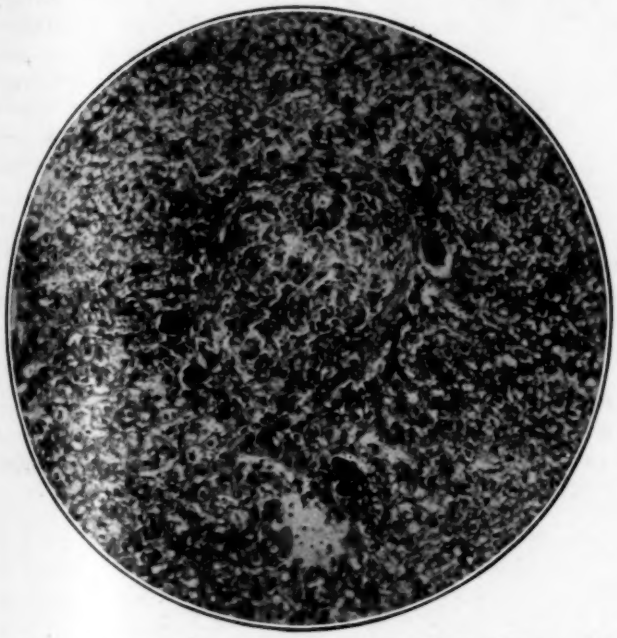

Fig. 3.—Liver of animal receiving liquid petrolatum after the injection of tubercle bacilli; there is evidence of beginning walling off of the tubercle (hematoxylin-eosin; slightly reduced from a photomicrograph of 140 magnification).

pulmonary tuberculosis is infrequent, owing to the fact that the venous congestion in the lung affords a greater oxygen supply in the venous blood.

The mechanism of mitral stenosis in the prevention of pulmonary phthisis is explained by Fishberg in this manner: Mitral stenosis causes a mechanical impediment to the lesser circulation, thus creating congestion or plethora of the blood vessels of the lungs, and this has been offered as an explanation for the antagonism between this disease and phthisis. But it must be borne in mind that in compensated mitral stenosis the lungs do not have a larger quantity of blood than normally; it is only with the onset of decompensation that the pressure is lowered and the blood stream is slowed, thus favoring a larger quantity of blood in the lungs.

In the various forms of therapy that have been used in tuberculosis, heliotherapy has played quite an active rôle. The favorable results reported with this form of therapy have probably been due to the congestion resulting in the local and remote areas. Sersirous'[8] summary of the action of light rays within the body is stated thus: "By their power of decomposing and oxidizing, they destroy ferments, diastases, microbes and the toxins of microbes, in the same way as they destroy molds and mosses, and they are vasodilators and produce a passive congestion that greatly favors phagocytic action." The other forms of heliotherapy that have been used, such as the Finsen light, the quartz light, and sun and electric baths, have all as their fundamental basis the production of congestion. The latter effect has been greatly emphasized by Bier, in his application of passive hyperemia in the various forms of surgical and nonsurgical conditions.

All of the evidences enumerated above show that passive congestion in the lungs in some way inhibits the development of tuberculosis. Of the effect of passive congestion in the other organs, especially with relation to the development of tuberculosis, we have found no mention in the literature. The experiments reported here have been undertaken for the purpose of ascertaining the effect of passive congestion of the liver on tubercle formation.

EXPERIMENTAL OBSERVATIONS

We have found that the most simple and at the same time a reliable method for the production of passive congestion, primarily in the lungs, with secondary involvement of the abdominal viscera, is by the intravenous injection of small quantities of oil. This procedure was accomplished by injecting intravenously into the ear vein of rabbits 0.5 c.c. of liquid petrolatum, twice a week. The experiments have been repeated three times, so that the results are more or less uniform.

Three series of rabbits were used in each experiment, each group consisting of five rabbits. Of these, one group of rabbits received 0.5 c.c. of liquid petrolatum intravenously twice a week for a period of one month. Then the entire series of rabbits were inoculated with tubercle bacilli (bovine type) suspended in oil. The inoculation was in the portal vein or in a branch of the mesenteric vein. From ten to fourteen days later, the group that received oil prior to the injection of tubercle bacilli, and a second group of five rabbits again received liquid petrolatum intravenously, 0.5 c.c. twice a week. A third group was used as a control. The

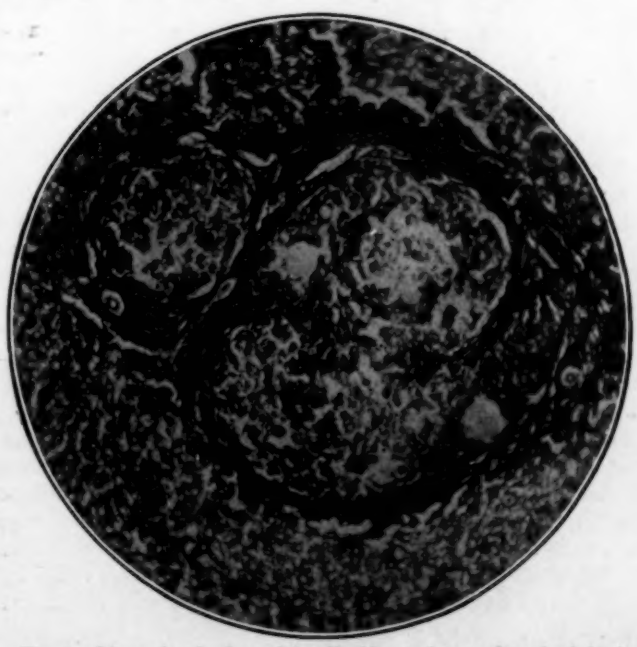

Fig. 4.—Liver of animal receiving liquid petrolatum after the injection of tubercle bacilli; there is a definite increase of fibrous tissue surrounding the tubercle (Mallory stain; slightly reduced from a photomicrograph of 100 magnification).

latter group of rabbits received no oil, merely being inoculated with the same dose of tubercle bacilli as the two other groups. Six weeks later, all the animals were killed, and the organs examined macroscopically and microscopically.

One hundred milligrams of a virulent strain of bovine tubercle bacilli (marked M. T. S. No. 3/30/18) was

6. Walsh, J.: Am. Rev. Tuberc. **6**: 975, 1922.
7. Weiss, A.: Wien. klin. Wchnschr. **25**: 697, 1912.
8. Sersirous, quoted by Dinnan, J. B.: Heliotherapy in Tuberculosis, M. Rec. **97**: 62 (Jan. 10) 1920.

suspended in 50 c.c. of liquid petrolatum. In the first two experiments that were performed, 0.5 c.c. of this suspension was injected into the portal vein. When this experiment was repeated for the third time, a similar mixture was prepared, and 1 c.c. was injected into the portal vein. It must be remembered that the organisms

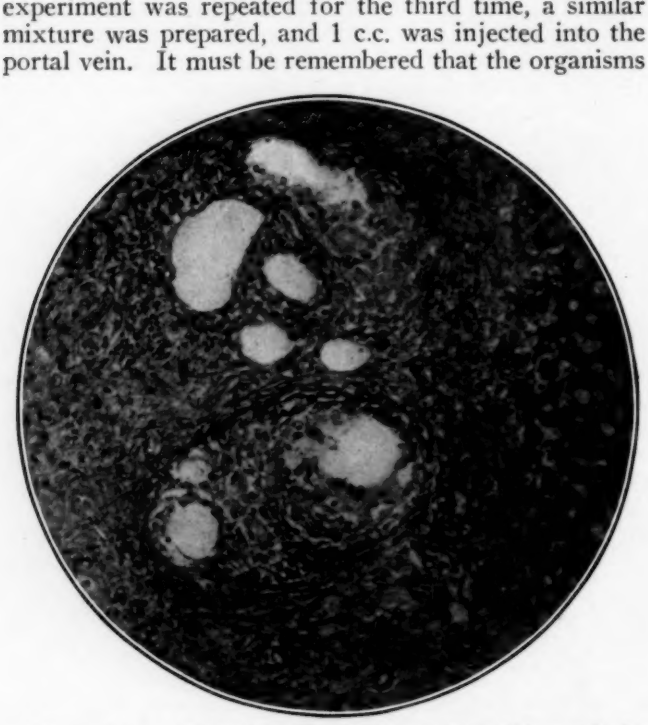

Fig. 5.—Liver of animal receiving liquid petrolatum before and after the injection of tubercle bacilli; there is a definite formation of fibrous tissue around the tubercle (hematoxylin-eosin; slightly reduced from a photomicrograph of 140 magnification).

must be freshly prepared before being used, for if the tubercle bacilli are permitted to remain in the oil suspension for any length of time, the virulency of the organism becomes lessened.

In the first two experiments performed in which smaller amounts of tubercle bacilli were injected, we observed a very slight diminution in the number of tubercles formed in the livers of the animals that received oil before the injection of the tubercle bacilli, as contrasted to the number found in the control animals. The animals that received oil after the inoculation of tubercle bacilli showed no marked difference in the distribution of the tubercles in the livers than was observed in the control animals. The lungs of the control animals showed marked evidences of tubercle formation. The lungs of the animals that received oil prior to the injection of tubercle bacilli showed no gross evidences of tubercle formation. The lungs of the animals that received oil after the injection of tubercle bacilli showed a few scattered tubercles grossly, but not as much as was found in the control animals. The kidneys of the control animals showed gross evidences of tubercle formation. When the lungs and the livers of the animals of the entire series were examined microscopically, there was a distinct differentiation noted as to the deposit of fibrous tissue around and within the tubercles in the liver.

In the last experiment performed, in which 1 c.c., or twice the original dose, of bovine tubercle bacilli was injected into the portal vein, grossly no difference in the distribution or number of the tubercles could be observed in the livers. The microscopic examination of the tubercles in the liver showed that, in the control animals, the fibrous (Mallory stain) and connective tissue (van Gieson stain) was scanty in amount and found around the tubercle (Figs. 1 and 2). The histologic examination of the livers of the animals that received oil intravenously after the injection of tubercle bacilli showed a greater deposit of fibrous and connective tissue around the tubercle (Figs. 3 and 4). In fact, connective and fibrous tissue was also deposited within the tubercle. The microscopic examination of the livers of the animals that received oil intravenously before and after the injection of tubercle bacilli showed the greatest deposit of connective and fibrous tissue around and within the tubercle (Figs. 5 and 6), and this increased fibrous tissue could be seen surrounding the cells within the tubercle. The lungs of the control animals, however, showed evidences of tubercle formation which were observed to be fewer in number in the lungs of the rabbits that received oil after the injection of tubercle bacilli; the lungs of the rabbits that received oil prior to the injection of tubercle bacilli were relatively free from tubercle formation.

COMMENT

From the foregoing observations there appears to be no marked difference as to the degree of macroscopic distribution of tubercles in the livers of the treated and control animals. The microscopic examination of the livers of these animals shows that the amount of fibrous tissue formation around and within the tubercles is less in the control animals, that a greater formation takes place in the animals that received oil after tubercle bacilli injection and that the greatest formation is found in the animals that received oil before and after tubercle bacilli injection. Although the animals that received the oil before and after the injection of tubercle bacilli showed a marked degree of passive congestion, the latter effect evidently was not comparable to the effect

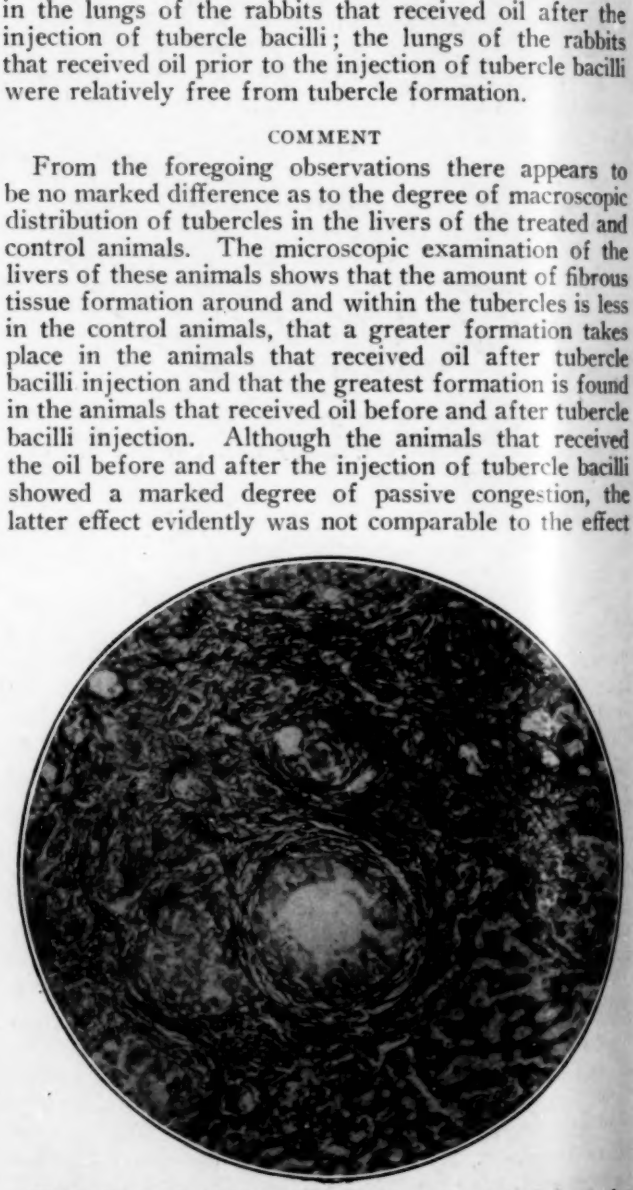

Fig. 6.—Liver of animal receiving liquid petrolatum before and after the injection of tubercle bacilli; there is a marked formation of fibrous tissue around and within the tubercle (Mallory stain; slightly reduced from a photomicrograph of 140 magnification).

in the organs that we see in cases of passive congestion in the lung with chronic heart disease and other complications. To begin with, when the oil was injected intravenously into the ear vein of the rabbit, the heavy oil droplet of the liquid petrolatum flowed into the smaller veins and capillaries of the lungs, thus blocking

these vessels and producing a dilatation of the proximal portion of the vessel, with the resulting formation of a passive hyperemia of the lung. It is possible that some of the oil injected may have reached the smaller vessels and capillaries of the liver and produced a passive congestion of this organ. The more plausible explanation is that the liver became secondarily involved to the passive hyperemia produced in the lung, with a secondary dilatation of the heart. As was expected, the heart was enlarged in all of the animals that received oil injections. The abdominal organs, especially the abdominal vessels, were congested.

Another factor of importance in a consideration of the results of this experiment is the dosage of the tubercle bacilli injected. It was observed that the animals receiving the smaller dosage of tubercle bacilli showed different results than the animals receiving the larger dose. In the former, the animals receiving oil before the injection of tubercle bacilli and in which, therefore, a passive hyperemia had already been introduced at the time of inoculation, showed relatively fewer tubercles in the livers than was observed in the livers of the animals that received oil before being inoculated with the larger doses of tubercle bacilli.

Then, the mode of injection of the tubercle bacilli must also be taken into consideration. A virulent strain of bovine tubercle bacilli was suspended in oil and injected into the portal vein, the purpose being that the organisms suspended in the oil when injected into the portal vein would form emboli in the smaller vessels and capillaries of the liver, and be foci for tubercle formation. Occasionally, some of the organisms escaped through the vessels of the liver and became lodged in the capillaries of the lung. This observation was noted in the lungs of the control animals.

The observations recorded on the biochemical changes of the blood in passive hyperemia were made in cases of passive congestion of the lung, and it is possible that these chemical changes may be important in playing a rôle in the prevention of tubercle formation in the areas of passive hyperemia. Weiss advanced the theory that the low oxidation capacity of the lung determines its vulnerability for tubercle bacilli. The familiar fact that, with congenital pulmonary valve stenosis, pulmonary tuberculosis is common, and in mitral stenosis it is infrequent, is to be explained by the greater blood and oxygen supply in the latter, since in the lungs the venous blood is better oxygenated. Furthermore, the resistance of the passive congestion lungs to tuberculosis may be equally well attributed to a high carbon dioxid content, as has been demonstrated by Corper, Gauss and Rensch.[9]

Whether or not a condition as to the oxidizing and carbon dioxid content of the venous blood exists in the liver similar to that found in the venous blood during congestion in the lung is problematic. This possibly may account for the marked difference in the quantitative rate of development of tubercles in the liver as compared with the lung in cases of passive congestion of this organ. The other factor to be taken into consideration, which requires more experimental study, is the more detailed examination of the chemistry of the blood during this condition, with especial reference to the carbon dioxid content, enzymes and lipolytic power of the blood, together with a histopathologic and chemical study of the organs.

9. Corper, H. J.; Gauss, Harry, and Rensch, O. B.: Resistance to Tuberculosis, a Nonimmunologic Chemical Factor Worthy of Consideration, J. A. M. A. 76: 1216 (April 30) 1921.

Although our results do not show any gross differences as to the quantitative distribution of the tubercles in the livers between the treated and control animals as compared with the favorable observations reported with passive congestion of the lungs and its relation to tuberculosis, they show that passive hyperemia must be associated with other conditions that favorably influence tuberculous lesions. Further studies along this line are being carried on.

CONCLUSIONS

In an experimentally produced passive hyperemia of the liver, no striking differences were noted grossly between the treated and control animals as to the quantitative distribution or size of tubercles in the liver.

The histologic examination of the livers shows a greater deposit of fibrous tissue around and within the tubercles in animals that received oil before and after being injected with tubercle bacilli, less in the animals that received oil after the injection of tubercle bacilli, and least in the control animals.

The lungs of the control animals, however, contained more tubercles than the lungs of the animals receiving oil after the tubercle bacilli injection. The lungs of the rabbits receiving oil prior to tubercle bacilli injection were relatively free from tubercles.

ABSTRACT OF DISCUSSION

DR. H. J. CORPER, Denver: About twenty-five years ago, Weber, on purely empiric reasoning and by correlating clinical facts, deduced that carbon dioxid played a part in the protective mechanism against tuberculosis during the existence of certain pathologic conditions affecting the lungs. About the same time, Bier was initiating his well known clinical studies on hyperemia or stasis treatment. Singularly, however, very few investigators have considered the experimental side of these conceptions in tuberculosis; hence, accurately controlled data are lacking to indicate just how far these conditions may influence this disease experimentally or clinically. In 1906, Baumgarten reported that stasis hyperemia retarded anthrax and staphylococcus infections, but one or two hours of stasis treatment daily for weeks had no effect on an experimental albus tumor of the knee joint. This dosage, however, can be considered insignificant only in view of present-day knowledge of the effect of carbon dioxid on the tubercle bacillus. Petersen and Levinson's work is an attempt to study the effect of a prolonged stasis on tuberculosis, and they report obtaining significant findings. Last week I reported before the National Tuberculosis Association findings obtained in rabbits when one ear was used as control and the other was constricted, thus producing a stasis which was maintained for twelve hours daily, initially, and finally continuously. The constricted ear contained about 20 per cent. more carbon dioxid than the nonconstricted control. Our experiments were complicated by an early ulceration of the intracutaneous tuberculous lesions and by tissue changes consequent to the stasis; but, when comparative reading of the lesions was possible, it was found that the development of the lesions in the stasis ear was distinctly retarded. I would especially emphasize that these experiments are to be viewed from a purely scientific and academic standpoint and are in no way applicable for clinical use, because the extreme stasis necessary experimentally at times became incontrollable and resulted in a sloughing of the stasis ear. It is hoped, however, that the results of experiments such as these performed by Petersen and Levinson and in our laboratory will eventually lead to chemotherapeutic possibilities.

DR. LYDIA DEWITT, Chicago: I have been very much interested in the carbon dioxid treatment of tuberculosis, if I may call it that, ever since it was first suggested, but have done no work along this line. I was going to suggest to Dr. Levinson what Dr. Corper already has suggested. The

question of the distribution of tuberculosis in the treated as compared with the untreated animal can hardly be counted as a very marked consideration at all, because in any large set of animals we never get distribution at all alike.

DR. S. A. LEVINSON, Chicago: We did not notice any difference grossly as to the quantitative distribution of the tubercles in the livers of the treated and control animals. The histopathologic examination showed a difference between the treated and the control animals. We have experiments under observation now in which we are going to determine the carbon dioxid content of the blood in the treated and control animals in which we have produced a passive hyperemia of the liver.

AUSCULTATION IN THE PHYSICAL EXAMINATION OF THE ABDOMEN *

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Auscultation is the least important of the methods of examining the abdomen. It can furnish, however, in certain cases, information that may be confirmatory, suggestive or definite. The sounds that can be heard are of greater variety than those audible in the thorax, but are, as a rule, more vague and unsatisfactory. The sounds may be either intrinsic, produced in the abdominal cavity, or extrinsic, heard over the abdominal cavity but produced in some other part of the body, always the thorax. The auscultation can be divided into (1) direct, produced with the ear alone; (2) indirect, with some form of stethoscope, and (3) modified, in which some additional procedure, such as percussion, stroking, the bubbling of air through a tube, or the vibration of a tuning fork, is used.

It is rather difficult to classify satisfactorily the sounds heard in the abdomen. Perhaps as good a classification as any is one based on the source. According to this the alimentary tract produces sounds from the esophagus, stomach and small and large intestines; special sounds are also heard at the cardia and pylorus.

The peritoneum produces chiefly friction sounds, heard particularly over the spleen and less frequently over the liver. It is possible that friction sounds may be heard in other parts, but they must be very rare, for I have found no direct reference to them nor have I heard them. If air should enter the peritoneal cavity, with fluid in the lower part of the air cavity, then metallic bubbling or tinkling can be heard. Sometimes a crepitant sound is heard in the epigastrium in association with carcinoma of the pylorus. In addition to the friction sound of perisplenitis and perihepatitis, crepitation in the hydatid cyst has been heard; once I noted crepitation in a gallbladder that was subsequently found to contain six small stones.

The vascular system gives rise to a variety of murmurs and hums, and sometimes to systolic sounds that may be of considerable intensity. Two sounds may be heard in a pregnant uterus: the fetal heart sounds, and the venous hum. Crepitus may also be elicited in some cases of fracture of the pelvic bones.

The extrinsic sounds transmitted are less numerous: (1) from the heart, rarely murmurs; (2) from the lungs, particularly râles, and (3) from the pleura, the succussion splash.

The recognition of the esophageal sounds is usually ascribed to Meltzer. The first sound is constant; the second sound is delayed in all forms of esophageal obstructions, and, if the obstruction is severe, it is lost. In cardia spasm, it is extremely variable, but always delayed or lost. This is a form of modified auscultation. The bell of the stethoscope is placed in the epigastrium immediately below the tip of the xiphoid cartilage, and the patient swallows about an ounce of water. The interval of time between the first and second sounds is measured; normally it is from six to eight seconds. If there is slight obstruction, it may be prolonged to from fifteen to thirty seconds. Bassler quotes with approval Revidtzev's statement that repeated swallowing movements after the second sound has been heard cause a repetition of the sound, if there is an esophageal stricture; but, even without these swallowing movements, the repetition occurs.

There are five important sounds heard in the stomach: a splash, a metallic dropping or tinkling, a loud gulping or roaring sound just before vomiting, a curious sound resembling the noise produced in a perforated rubber ball when it is squeezed, and a loud rumbling audible at a distance, that may be heard occasionally in young girls after meals.

The splash is the sound usually studied, and much stress has been laid on its significance. It is best elicited by placing the bell of the stethoscope in the upper part of the epigastrium to the left of the median line, and giving sudden dips with the hand placed to the left of the umbilicus. A splash can nearly always be elicited immediately after some liquid has been taken. It may be present at one time and not at another, even when the conditions are apparently the same. It is therefore not necessarily a sign of an organic lesion, or atony of the stomach. It is nearly constant in dilatation with delayed evacuation. This occurs sometimes in ulcer and sometimes in gastroptosis and usually in pylorospasm and partially obstructing carcinoma. Sometimes the spash is elicited only if one hand is placed below the ribs posterior and the other over the stomach; pressure is then made between them. This seems to have no special significance.

Metallic tinkling occurs particularly with acute gastric dilatation, as in alcoholism or an infectious disease. It is a sign of serious disturbance. The gulping sound heard sometimes just before vomiting is of no significance in diagnosis.

The rubber ball sound is elicited in the same manner as the splash. It indicates a stomach moderately distended with air, that contains very little liquid. It suggests fermentation and some pylorospasm and is usually found in association with hypersecretion.

Concerning the loud borborygmi heard in young women, these seem to be produced by the contraction of the muscles of the abdominal wall. They do not indicate a lesion of the gastro-intestinal tract. A splashing sound synchronous with the heart beat is sometimes heard in marked atony. Hayem mentions it.

In the small intestines, peristalsis is the only important sound. It is usually a faint clicking nearly continous, occasionally interrupted, sometimes loud or of a spurting, hissing or gasping character. I have never been able to diagnose any particular lesion, such as a stricture, by the character of the sound, and in one case in which there was a very tight stricture of the

* Read before the Section on Practice of Medicine at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

ileum just above the valve, with persistent, violent, visible peristalsis, only loud clicking sounds were heard. On the other hand, absence of peristalsis, not as a rule difficult to determine, is almost pathognomonic of acute peritonitis. The converse is not true, for a localized peritonitis may be present with persistent peristalsis. I have observed several cases of this character, confirmed by operation, and all of them peritonitis due to perforation. It is possible that, in some rare instances, peristalsis may be absent as the result of a functional lesion. A woman, aged 40, with periods of constipation, was found to have cylindric intestinal shadows, with smooth outlines that looked, on the roentgenogram, as if they were simple tubes. On a subsequent occasion, part of the contents of a carmin capsule were washed through by transduodenal lavage three weeks after it had been swallowed, yet at no time were there symptoms of obstruction or inflammation. In this case, sometimes the peristaltic sounds cannot be heard.

The best place for ausculting the peristaltic sounds is the right lower quadrant. Usually, the ear directly applied is better than a stethoscope. Peristalsis should not be regarded as absent unless auscultation has been continued for at least three minutes.

The sounds heard in the colon are of four varieties: peristalsis, splash, borborygmi and metallic tinkle. Of these, the first is the most doubtful, for it is practically impossible to distinguish between the peristaltic sounds of the small and the large bowel. The splash is usually heard over the cecum, and the intensity varies. Sometimes there is only a crepitation elicited by pressing with the bell of the stethoscope or stroking or dipping with the hand, or the dipping may cause a splash as characteristic and loud as that heard in the stomach. It usually is found in the atony that accompanies splanchnoptosis. It may also be found on either side if there is dilatation of the colon to the proximal side of a partial obstruction. Borborygmi, or loud gurgling, best heard with the stethoscope, are of little significance. They are found often in states of anxiety or apprehension neuroses. Metallic tinkling is heard particularly on the proximal side of an obstruction, and I have heard it only in organic strictures. It may be heard although there is no visible dilatation of the portion of the colon in which it occurs, and it is valuable in locating the site of the stricture. In two cases, in which there was no visible distention of the colon, it was possible correctly to locate the site of the lesion, and therefore to perform the colostomy at a favorable position.

Sounds produced in the peritoneal cavity are rare. They consist of friction sounds that are either extremely rare or rarely recognized; of crepitation, of which the same thing is probably true, and of metallic tinkle and succussion. My experience has been very slight. Friction I have heard only once in a case diagnosed as perisplenitis. This patient had pain and tenderness in the splenic region, increased by breathing and greatly increased by strapping, together with fever and prostration. The friction was very loud, and heard best just beneath the end of the eleventh rib on the left side. The patient recovered. In another case, the friction was heard over the liver; this was also febrile. No operation was done, and this patient recovered.

Crepitation is described as one of the physical signs of hydatid cysts. It is produced by placing the bell of the stethoscope over the suspected cyst and palpating in the neighborhood with the hand. Dieulafoy mentions this, but Hayem does not. Hydatid cysts are rare in this country. Crepitation may be heard by the same method in a few cases of multiple stones of the gallbladder. In one case, it was heard and felt before operation. I heard it once in a patient with carcinoma, which involved the region of the pylorus and the gallbladder. Before the exploratory operation, hydatid cyst was suspected.

Metallic tinkling occurs when there has been an intestinal perforation, and liquid and gas are encapsulated in the peritoneal cavity by adhesions. In the one case that I studied, traumatic rupture of the transverse colon caused an air pocket between the anterior surface of the liver and the abdominal wall. The metallic tinkling lasted throughout the course of the case.

Succussion splash is usually, but not always, obtained in subdiaphragmatic pyopneumothorax. In the cases that I have observed, it was not loud. It is only an accessory sign in reaching a diagnosis.

Auscultation may be rendered more valuable by a variety of methods. Of these, the simplest is auscultatory percussion. It may be performed either with a long stem single stethoscope, as Hayem prefers, so that no assistant is required, or with the usual binaural form. This requires an assistant either to hold the bell of the stethoscope or to percuss. It is most useful for the purpose of outlining the stomach; less useful to outline a distended colon, and of very little use for any other purpose. In place of ordinary percussion, one-handed percussion may be performed by trilling with the index and middle fingers. The fingers must be held stiff and straight, the whole palmar surface striking the abdomen. They should be held parallel to the edge of the organ that is being outlined, and the trill should be as rapid as possible. This method seems to be more delicate and precise than ordinary percussion. With the Bianchi phonendoscope or Bowles stethoscope, stroking the surface of the abdomen gives fair but unequal results. The instrument is rarely used. A whistle in the end of the stomach tube has also been employed, but I have never tried it. It is not likely that it is better than the method used by the late John H. Musser, who blew small jets of air through the tube introduced into the stomach, the loud bubbling produced changing distinctly in intensity as the bell of the stethoscope moved over the edge of the stomach.

By far the best method of aided auscultation is the combination with the tuning fork. This was first, I believe, suggested by Benedict of Buffalo. It is simple, requiring no assistance, very quick and, when compared with other methods of outlining the stomach, especially the roentgen ray, is accurate, provided the patient is in the same position for the two methods. The tuning fork is particularly useful for stomach and colon delimitation. To outline the stomach, the bell of the stethoscope is placed in the epigastrium just to the left of the median line and below the tip of the xiphoid. The tuning fork, held by the stem, is set in vibration by a gentle blow, and it is better if the vibrations are not audible. The stem of the tuning fork is placed on the wall of the abdomen below the suspected position of the greater curvature, and is moved upward. The point at which the hum becomes loud and clear is assumed to indicate the lower border of the stomach. By moving the stem of the tuning fork along various radii that converge at the bell of the stethoscope, one can obtain a complete outline, but only in unusual cases

can a defect in the outline be demonstrated. The tuning fork is most useful if the patient is lying on the back, thus bringing the air bubble to the surface.

B. B. V. Lyon [1] has recently stated that if a loud hum is transmitted to the stethoscope when the stem of the tuning fork is placed over the liver, the existence of an adhesion between the liver and the stomach is indicated, and that, by varying the position of the tuning fork, the location and extent of the adhesion can be determined. I have not been able to substantiate this statement, but I have not had as large a number of controlled cases since I read the paper as Lyon reports. I feel sure that it is not correct in all cases; that is, in some cases the adhesions may be present and Lyon's sign fail, but in different cases conditions must vary so greatly that no sign could be expected to be constant.

Intrinsic abdominal sounds are also produced in the blood vessels. These consist of aneurysmal bruits, arterial sounds, vascular murmurs, either spontaneous or produced by pressure, and venous hums. Abdominal aneurysmal bruits are much rarer than abdominal aneurysms, and, as the diagnosis is not as a rule difficult, the presence of the murmur is easily explained. The bruit may be loud or faint, constant or interrupted; it is heard best in the epigastrium, and may sometimes also be heard in the left costovertebral region and sometimes along the left border of the lumbar vertebrae.

Systolic arterial sounds, the Traube sign, are heard in at least three conditions: (1) aortic regurgitation; (2) exophthalmic goiter, and (3) pernicious anemia. They are most frequently heard in aortic regurgitation, and are rare in the other two conditions. They are heard over the external iliac arteries, and also over the abdominal aota. In the latter position, they are sometimes confused with the accentuated first sound of mitral stenosis, which is also heard in the epigastrium. As the diagnosis of the three conditions in which these sounds occur rarely presents difficulty, excepting that during a partial remission of pernicious anemia the sound may persist, the reason for the presence of the sign is clear.

Systolic murmurs are found in six and possibly more conditions: 1. In arteriosclerosis, especially the advanced cases. The murmurs are often elicited only by pressure over the arteries. 2. In aortic regurgitation, also more likely to be heard if pressure is used. 3. In fevers, in which the murmurs are usually heard in the epigastrium and disappear as the fever subsides. I have suspected that they are caused by an endarteritis, but have never been able to prove that this is the case. These febrile murmurs are heard most frequently in typhoid fever. 4. In anemic conditions, usually heard best in the epigastrium, but rare even if the anemia is extreme. 5. In congestion of certain organs, particularly the kidney. These murmurs are rare and not at all certain. I have heard them in a case shown at operation to be acute congestion of the kidney due to temporary obstruction of the ureter. The murmur was systolic and heard in the right flank posteriorly. 6. In unexplained conditions. These murmurs are systolic in time, and are usually located in the epigastrium. They are transient and probably of little significance.

Concerning venous hums, I am very doubtful. I recall one case in which a persistent bruit with a systolic increase was heard in the right costovertebral angle. A number of men of the medical staff examined the patient and advanced various theories, but the postmortem examination supplied no explanation.

The auscultatory signs of subdiaphragmatic pyopneumothorax are similar to those of the supradiaphragmatic form.

The extrinsic sources of ausculatory signs in the abdomen are the esophagus (already described), the heart and the lungs.

The heart sounds are occasionally heard in the abdomen in apparently normal persons. If the heart is abnormal, particularly if there is hyperthyroidism with palpitation or mitral stenosis, the sounds are often clearly transmitted. I have endeavored in vain to discover some system or significance in this transmission. It is worth noting that the sounds of mitral stenosis are frequently heard most loudly in the left lower quadrant, but this is not invariable. A second sound is occasionally heard in the right upper quadrant, and heart murmurs are heard in the epigastrium. In one extraordinary case of tuberculous pyopneumopericardium, the loud crepitation sound produced by the churning action of the heart could be heard as far down as the umbilicus. Hayem also calls attention to the transmission of heart murmurs to the abdomen.

The interest in this subject has been greatly increased by an article of Aschner's.[2] This author asserts that in nearly all acute abdominal conditions with purulent or seropurulent exudate in the peritoneal cavity, the heart sounds and the inspiratory murmur can be heard over the abdomen. I have not been able to confirm this, but I have not had enough cases to assert that it never occurs. The converse, however, is not true, for the heart sounds may be heard although there is no peritonitis. The sign may be of some confirmatory value, but as a test it must always be regarded as uncertain.

Of all the pulmonary sounds heard, the harsh crackling of pulmonary edema is most constantly, indeed almost invariably, audible in the abdomen. The distribution is diffuse and the transmission loud. Bronchial breathing may also be heard in the upper abdomen on the same side as the affected lung. Râles, if loud, as in asthma, are often audible below the ribs. The succussion splash of a pyoneumothorax can also be heard. Friction rubs are rarely transmitted, at least I have heard them only a few times when the pleural friction was very loud. Hayem, however, mentions them.

1. Lyon, B. B. V.: A Clinical Method of Determining Adhesions Between the Stomach and the Gall Tract, Surg., Gynec. & Obst. **35**: 232-233 (Aug.) 1922.

2. Aschner, P. W.: Auscultatory Sign Observed in Acute Abdominal Diseases, Am. J. M. Sc. **162**: 712 (Nov.) 1921.

The Modern Physician.—With the emergence of medicine from the mysterious, no less a revolution has occurred in the practitioner of medicine. While a good bedside manner is still a valuable asset, and will so remain in so far as it connotes a sympathetic and human attitude towards the sick and suffering, and while from a business point of view a good shop-front no doubt has its value, no longer are the doctor's brains assessed by the sheen of his tall hat or the length of his frock coat. Like medicine, the doctor has become less mysterious, less aloof from and superior to his fellow men. Knowing more he has become less omniscient. Standing on surer ground he has become less pretentious. The medical priestcraft, reminiscent of a time when the medicine man was more priest than physician, and more charlatan than either, has disappeared or is disappearing. This is all to the good, and tends to a more enlightened confidence between doctor and patient.—Childe, C. P.: Environment and Health, *Lancet* **2**:155, July 28, 1923.

RESPONSE OF PERSONS VACCINATED WITH TRIPLE TYPHOID VACCINE *

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The object of this report is (1) to record the clinical reactions of 134 persons vaccinated with the "triple vaccine" to immunize them against the typhoid group of diseases; (2) to record the titrations of the serums of 110 of the vaccinated persons, and (3) to report some phenomena observed during the work.

Rawling's strain of *B. typhosus* was used. For the culture of this strain and, also, for the cultures of *B. paratyphosus* A and B, we are indebted to the California State Hygienic Laboratory. These strains were used both in the preparation of the vaccine and in titrations of serums.

The vaccine was prepared so that 1 c.c. contained of the agar grown, heat killed (60 C.) organisms *B. typhosus*, 500,000,000; *B. paratyphosus* A, 250,000,000, and *B. paratyphosus* B, 250,000,000. The vaccine was given by three subcutaneous injections at ten-day intervals, the quantities being, respectively, 0.5, 1 and 1 c.c.

CLINICAL REACTIONS

Only general reactions were recorded. Satisfactory records were obtained from 120 of the 134 persons receiving the first injection of vaccine; from 122 receiving the second injection, and from 110 receiving the third injection. The persons to be vaccinated were segregated into four groups according to the histories given of previous vaccination against typhoid fever or a past attack of typhoid fever, or both.

Table 1 may be thus summarized: No reactions: first injection, 52 per cent.; second injection, 49 per cent.; third injection, 78 per cent. Mild reactions: first injection, 43 per cent.; second injection, 45 per cent.; third injection, 21 per cent. Severe reactions: first injection, 5 per cent.; second injection, 6 per cent.; third injection, 1 per cent. Chills: first injection, 16 per cent.; second injection, 14 per cent.; third injection, 3 per cent. There was no striking difference between the reactions of the four groups. The evidence indicates, therefore, that neither previous vaccination nor a past attack of typhoid fever influences materially the clinical reactions to subsequent vaccination. The most striking phenomenon brought out is that the third injection caused a much smaller percentage of mild and severe reactions and chills than did the first and second injections. Two injections, therefore, seemed to produce a definite relative tolerance for the toxins of the vaccine.

We observed a phenomenon parallel to that mentioned above in a rabbit that had received repeated intravenous injections of heat killed typhoid bacilli. Neither a febrile nor an apparent general reaction could be induced by the intravenous injection of heat killed organisms from the whole twenty-four hour growth on two agar slants. A severe reaction, however, was induced by the living organisms from one agar slant. The same strain of typhoid organisms caused marked febrile reactions in rabbits not previously inoculated when the heat killed organisms of one-half the growth on one agar slant were injected intravenously.

Craig [1] and Davison [2] also have reported that the clinical reactions from the third injection of triple vaccine were less numerous and less severe than those after either the first or the second injection. In Craig's series, however, the negative or mild reactions after the second injection were more numerous than after the first, while in ours they were approximately equal.

AGGLUTINATION TESTS

Tests to determine the agglutinating power of the serums of 110 of the vaccinated persons were made on approximately the tenth day after the third injection of the vaccine.

Antigen.—During previous work on the agglutinins of rabbits inoculated with *B. typhosus*, we observed that agar cultures of organisms grown at a low temperature (on top of the incubator) were agglutinated far more readily than incubator-grown cultures at 37 C.

TABLE 1.—*General Reactions to "Triple Vaccination"*

	Per Cent. of Reactions* to First Dose, 0.5 C.c.					Per Cent. of Reactions to Second Dose, 1 C.c.					Per Cent. of Reactions to Third Dose, 1 C.c.				
	No. of Records	None	Mild	Severe	Chills	No. of Records	None	Mild	Severe	Chills	No. of Records	None	Mild	Severe	Chills
1. Not previously vaccinated and no history of typhoid	69	58	39	3	16	75	57	39	4	12	69	78	20	1.5	4.3
2. Previously vaccinated; no history of typhoid	31	42	48	10	16	29	38	55	7	28	27	81.5	18.5	0	0
3. History of typhoid; not previously vaccinated	14	43	50	7	21	12	42	50	8	0	11	73	27	0	0
4. Previously vaccinated and history of typhoid	6	50	50	0	0	6	17	67	17	0	3	67	33	0	0
Totals	120	52	43	5	16	122	49	45	6	14	110	78	21	1	3

* "None" indicates temperature under 99 and no malaise; "mild," temperature 99 or over but under 102, general malaise, sometimes chills; "severe," temperature 102 or over, malaise, often chills.

We repeated this observation many times with typhoid and paratyphoid bacilli, testing them with both rabbit and human serums. After determining that the room-grown cultures were not agglutinated by normal serums, we introduced their use in the preparation of typhoid and paratyphoid antigens for routine agglutination tests. The eighteen to twenty-four hour agar culture was suspended in physiologic sodium chlorid solution and diluted so that 1 c.c. contained approximately 1,000,000,000 organisms. The agglutinability of these antigens has been compared with Dreyer's [3] formaldehyd-killed standard antigen made from both incubator and room-grown organisms. The agglutinability of the two antigens was found to be approximately the same. Dreyer's antigen made from room-grown organisms seemed a little more sensitive than one made from incubator organisms, though no striking difference was observed.

Serums.—The first sixty-eight tests were made with both active and inactive serums. As it was found that

* Read before the Section on Pathology and Physiology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

1. Craig, C. F.: Triple Typhoid Vaccine, J. A. M. A. **69**: 1000 (Sept. 22) 1917.
2. Davison, W. C.: Superiority of Inoculations with Mixed Triple Vaccine, Arch. Int. Med. **21**: 437 (April) 1918.
3. Dreyer, Georges: J. Path. & Bacteriol. **13**: 332, 1909.

bacteriolytic substances in active serums frequently interfered with and obscured agglutination in low dilutions and sometimes in dilutions as high as 1 to 160, subsequent tests were made with inactivated serums only. Inactivation did not affect the titer of agglutinins.

Method.—The macroscopic method was used. Serial dilutions of a serum were made in eight small test tubes, 0.4 c.c. of each dilution being used. To each tube, 0.4 c.c of antigen was added, making a total quantity of 0.8 c.c.. The final dilutions of serum were 1:10, 1:20, 1:40, 1:80, 1:160, 1:320, 1:640 and 1:1,280. A ninth tube containing 0.4 c.c. of antigen and 0.4 c.c. of physiologic sodium chlorid solution controlled spontaneous agglutination and furnished a standard for comparison. The tubes were incubated for two hours at 37 C., placed in the icebox overnight, and the result of the test read the next morning. Records were made of the highest dilution showing complete agglutination (clear supernatant fluid and sedimented organisms), and of the highest dilution showing partial agglutination (granular macroscopic appearance compared with the control tube).

TABLE 2.—*Agglutinating Power of Serums from One Hundred and Ten Vaccinated Persons*

Dilutions of Serums	Percentage of Reactions by Various Dilutions of Serums vs. Agglutinating B. Typhosus (Rawling's)			Percentage of Reactions by Various Dilutions of Serums vs. Agglutinating B. Paratyphosus A			Percentage of Reactions by Various Dilutions of Serums vs. Agglutinating B. Paratyphosus B		
	Complete	Partial	None	Complete	Partial	None	Complete	Partial	None
1:10	78	21	1	72	23	5	73	22	5
1:20	72	23	5	70	17	13	66	25	9
1:40	64	24	12	68	15	16	51	25	24
1:80	47	26	26	59	15	25	34	24	43
1:160	16	32	52	43	24	34	13	24	64
1:320	7	9	84	22	29	49	3	11	86
1:640	3	5	98	8	16	75	0	4	96
1:1,280	0	3	97	0	8	92	0	0	100

TABLE 3.—*Agglutinating Power of Serum from Seventy Vaccinated Persons Previously Unvaccinated and Giving No History of Having Had Typhoid Fever*

Dilutions of Serums	Percentage of Reactions by Various Dilutions of Serums vs. B. Typhosus (Rawling's)			Percentage of Reactions by Various Dilutions of Serums vs. B. Paratyphosus A			Percentage of Reactions by Various Dilutions of Serums vs. B. Paratyphosus B		
	Complete	Partial	None	Complete	Partial	None	Complete	Partial	None
1:10	80	19	1	73	24	3	80	17	3
1:20	70	26	4	72	17	12	71	23	6
1:40	61	23	16	70	16	14	59	20	21
1:80	48	24	28	65	14	22	36	30	34
1:160	13	34	53	49	23	28	13	26	61
1:320	7	7	86	26	28	46	3	10	87
1:640	4	3	93	10	16	74	0	3	97
1:1,280	0	4	96	0	10	90	0	0	100

The results of the tests as a whole are shown in Table 2. The results of the tests segregated into groups with reference to the absence or presence of a history of previous vaccination or of past typhoid fever, and the occurrence or not of marked reactions to the vaccines are shown in Tables 3, 4, 5, 6 and 7.

AGGLUTINATION TESTS

Table 2 shows that vaccination with triple vaccine stimulates marked production of agglutinins for each of the three organisms, a fact that has been previously demonstrated by other investigators, as Craig[1] and Davison.[2] It shows, further, that in this series the percentages of positive tests (complete or partial agglutination) in the lower dilutions up to 1:40 were approximately equal for the three organisms. In dilution of 1:80, and in greater dilutions, the percentage of positive tests for *B. paratyphosus* B decreased much more than for *B. typhosus* and *B. paratyphosus* A, while the higher dilutions agglutinated *B. paratyphosus* A better than *B. typhosus*. Craig[1] obtained practically the same results, though the variations were not so great in his series of twenty-four persons. Individuals in our series exhibited marked differences in their responses to the three organisms, though, in general, the responses ran roughly parallel, but less so than in Craig's series. Not infrequently, one serum would agglutinate *B. typhosus* in high dilution and *B. paratyphosus* A or B or both in but low dilution. Agglutination with high dilutions was obtained most frequently with *B. paratyphosus* A, which, like B, was present in the vaccine in only half the number of *B. typhosus*. This did not appear to be due to the greater agglutinability of the A strain, for thirty serums agglutinated *B. typhosus* in higher dilution. The relative agglutinating power of the serums for the three organisms was:

B. typhosus was agglutinated by higher dilutions than *B. paratyphosus* A thirty times, or 27 per cent.

B. typhosus was agglutinated by higher dilutions than *B. paratyphosus* B fifty-three times, or 48 per cent.

B. paratyphosus A was agglutinated by higher dilutions than *B. typhosus* fifty-one times, or 46 per cent.

B. paratyphosus A was agglutinated by higher dilutions than *B. paratyphosus* B sixty-one times, or 55.5 per cent.

B. paratyphosus B was agglutinated by higher dilutions than *B. typhosus* twenty-five times, or 22 per cent.

B. paratyphosus B was agglutinated by higher dilutions than *B. paratyphosus* A eighteen times, or 16 per cent.

Comparison of Tables 3 and 4 brings out no definite difference in the agglutinin response to *B. typhosus* between the groups previously and not previously vaccinated. In the cases of *B. paratyphosus* A and B, the negative group responded better than the previously vaccinated group, but the difference is probably fortuitous. It would be rash to argue that previous vaccination actually inhibited the production of agglutinins.

TABLE 4.—*Agglutinating Power of Serums from Twenty-Five Vaccinated Persons Previously Vaccinated But Giving No History of Having Had Typhoid Fever*

Dilutions of Serums	Percentage of Reactions by Various Dilutions of Serums vs. B. Typhosus (Rawling's)			Percentage of Reactions by Various Dilutions of Serums vs. B. Paratyphosus A			Percentage of Reactions by Various Dilutions of Serums vs. B. Paratyphosus B		
	Complete	Partial	None	Complete	Partial	None	Complete	Partial	None
1:10	72	28	0	64	24	12	52	32	16
1:20	72	24	4	60	20	20	52	20	28
1:40	60	36	4	60	12	28	28	36	36
1:80	44	28	28	44	20	36	24	8	68
1:160	20	28	52	24	24	42	8	16	76
1:320	4	16	80	12	16	72	4	4	92
1:640	0	4	96	4	8	88	0	4	96
1:1,280	0	0	100	0	4	96	0	0	100

Indeed, it is not known whether or not the previous vaccine used contained all three organisms or only *B. typhosus*. Certainly it contained the latter, and there is no appreciable difference between the responses to *B. typhosus* in the two groups.

The group of Table 5, representing the persons giving a history of past typhoid fever, is small. Comparing the reactions with those of Tables 3 and 4, it would seem at first that the typhoid group responded best to vaccination with *B. typhosus*. But it apparently

responded best, also, to the paratyphoid A and B organisms. The group shows no very striking variation, and such as there is must be regarded as incident to the small number of persons in the group. The serums of the two persons who had been vaccinated previously and who, also, gave a history of past typhoid fever showed no striking agglutinating power.

Comparison of Tables 6 and 7 shows that the agglutinating power of the serums of the group of persons who had a marked clinical reaction to the vaccine was slightly stronger than that of the serums of the negative group. The difference, however, was not great enough to be of significance.

One person was vaccinated by an intravenous injection of 0.1 c.c. of the vaccine. He had a severe chill and

TABLE 5.—*Agglutinating Power of Serums from Twelve Vaccinated Persons Not Previously Vaccinated but Giving a History of Having Had Typhoid Fever**

Dilutions of Serums	Percentage of Reactions by Various Dilutions of Serums vs. B. Typhosus (Rawling's)			Percentage of Reactions by Various Dilutions of Serums vs. B. Paratyphosus A			Percentage of Reactions by Various Dilutions of Serums vs. B. Paratyphosus B		
	Complete	Partial	None	Complete	Partial	None	Complete	Par. tial	None
1:10	83	17	0	75	17	8	75	25	0
1:20	83	17	0	75	17	8	67	33	0
1:40	83	17	0	75	17	8	58	25	17
1:80	58	33	8	67	17	17	42	33	25
1:160	33	25	42	50	25	50	17	33	50
1:320	17	17	67	17	50	33	0	25	75
1:640	0	8	92	8	25	67	0	8	92
1:1,280	0	0	100	0	8	92	0	0	100

* Two persons had had typhoid fever and had been previously vaccinated also. The titrations of their serums were:
1. B. typhosus agglutination complete 1:80; partial 1:160
B. paratyphosus A agglutination complete 1:80, partial 1:160
B. paratyphosus B agglutination complete 1:20, partial 1:40
2. B. typhosus agglutination complete 1:20, partial 1:40
B. paratyphosus A agglutination complete 1:20, partial 1:40
B. paratyphosus B agglutination complete 1:40, partial 1:80

TABLE 6.—*Agglutinating Power of Serums from Seventy-Seven Vaccinated Persons Who Had No Systemic Reaction to the Vaccine or Whose Temperature Did Not Rise to 101 F.*

Dilutions of Serums	Percentage of Reactions by Various Dilutions of Serums vs. B. Typhosus (Rawling's)			Percentage of Reactions by Various Dilutions of Serums vs. B. Paratyphosus A			Percentage of Reactions by Various Dilutions of Serums vs. B. Paratyphosus B		
	Complete	Partial	None	Complete	Partial	None	Complete	Par. tial	None
1:10	77	22	1	70	23	7	69	25	7
1:20	69	29	3	68	19	13	60	29	10
1:40	62	26	12	65	18	17	51	22	27
1:80	47	27	26	60	10	30	31	26	43
1:160	14	34	52	45	21	34	13	21	66
1:320	5	8	87	19	32	48	1	13	86
1:640	0	5	95	7	17	77	0	3	97
1:1,280	0	0	100	0	7	93	0	0	100

fever reaction. Before vaccination, no agglutinins could be demonstrated even in a 1:10 dilution of the serum. The serum titrations, showing dilutions that produced complete agglutination, are given in Table 8.

While very good agglutinating power was obtained by the small quantity of vaccine given intravenously, it should be noted that the titer rapidly decreased, at least against *B. typhosus* and *B. paratyphosus* B, so that within about six weeks after vaccination, agglutination was incomplete or absent in even a 1:10 dilution of the serum.

Another person, who had previously been vaccinated against typhoid, was given 0.1 c.c. subcutaneously of the vaccine daily for nine days. There were no clinical reactions. The serum titrations, showing complete agglutination, were as in Table 9.

There was no change in the reaction against *B. typhosus*, but there was a marked production of agglutinins against *B. paratyphosus* A and B.

The so-called "proagglutinoid" phenomenon was encountered six times in the tests with *B. typhosus*, four times with *B. paratyphosus* A, and three times with *B. paratyphosus* B. In these tests, the lower dilutions

TABLE 7.—*Agglutinating Power of Serums from Thirty-three Vaccinated Persons Who Reacted to the Vaccine with a Temperature of 101 F. or More or (and) Chills*

Dilutions of Serums	Percentage of Reactions by Various Dilutions of Serums vs. B. Typhosus (Rawling's)			Percentage of Reactions by Various Dilutions of Serums vs. B. Paratyphosus A			Percentage of Reactions by Various Dilutions of Serums vs. B. Paratyphosus B		
	Complete	Partial	None	Complete	Partial	None	Complete	Par. tial	None
1:10	82	18	0	76	21	3	82	15	3
1:20	79	12	9	76	12	12	82	15	6
1:40	67	21	12	76	9	15	52	33	15
1:80	49	24	27	58	27	15	39	18	42
1:160	21	27	42	36	30	33	12	30	58
1:320	12	12	76	27	21	52	6	6	88
1:640	9	3	88	12	15	73	0	6	94
1:1,280	0	9	91	0	12	88	0	0	100

of serum failed to agglutinate the organisms, while with higher dilutions agglutination was complete.

BACTERIOLYSIS

There appears to be considerable confusion in the literature regarding bacteriolytic substances, as "bacteriolysins" and "bactericidins" have been used synonymously. Obviously, bacteriolysis should refer to the actual solution of bacteria, as in Pfeiffer's [4] well known phenomenon, which Metchnikoff,[5] Bordet [6] and others reproduced to a lesser extent in vitro. Using "bacteriolysis" in this sense, we have been unable to find in the literature any mention of bacteriolysis, in vitro, of *B. typhosus* or of the paratyphoid organisms. This seems especially remarkable, because, in the agglutination tests reported above, lysis was an obvious phenomenon and interfered so frequently with the tests in the lower dilutions that it was found necessary to elimi-

TABLE 8.—*Dilutions That Produced Complete Agglutination*

	B. Typhosus	B. Paratyphosus A	B. Paratyphosus B
June 26, 1917 (vaccinated).....	No agg. 1:10	No agg. 1:10	No agg. 1:10
July 3.....	1:10	1:160	1:40
July 6.....	1:160	1:640+	....
July 13.....	1:160	1:640	1:80
August 14.....	1:10)	.....	No agg. 1:10
	1:40)partial agg.		

TABLE 9.—*Serum Titrations Showing Complete Agglutination*

	B. Typhosus	B. Paratyphosus A	B. Paratyphosus B
9/21/17 (before vaccination)..	1:80	No agg. 1:10	No agg. 1:10
10/ 6/17 (1 week after vac.)....	1:80	1:640	1:320

nate such a disturbing factor by inactivating the serum at 56 C. for one-half hour. Such serums could be reactivated by the addition of complement. The lytic bodies belonged, therefore, to the amboceptor-complement order of antibodies. The first sixty-eight agglutination tests were made with both active and inactivated serums. No bacteriolytic substances against

4. Pfeiffer: Ztschr. f. Hyg. **18**, 1894.
5. Metchnikoff: Ann. de l'Inst. Pasteur, 1895.
6. Bordet: Ann. de l'Inst. Pasteur, 1895.

B. paratyphosus B were observed, but frequent lysis of *B. typhosus* and *B. paratyphosus* A occurred. The results are given in Table 10.

Further studies on antityphoid lysins in normal and immune serums are being made, and the results will be reported in a subsequent communication. We wish merely to note here that we have found marked lytic power in normal human serums without agglutinins as well as in immune serums, and that rabbit immune

TABLE 10.—*Bacteriolysis of B. Typhosus (Rawling's) and B. Paratyphosus A*

Dilutions of Serums	Percentage of Lytic Reactions by Various Dilutions of Serums vs. B. Typhosus Rawling's (68 Tests)			Percentage of Lytic Reactions by Various Dilutions of Serums vs. B. Paratyphosus A (67 Tests)		
	Complete	Partial	None	Complete	Partial	None
1:10	88	6	6	19	33	48
1:20	86.7	7	6	10	31	58
1:40	79	13	7	4	12	84
1:80	48	32	10	2	4	94
1:160	4	44	51	0	2	99
1:320	0	4	96	0	0	100

serums, of high agglutinin titer, contain no lytic substances. On the other hand, in rabbits, complement-fixing bodies are produced in high titer by vaccination, while in human beings they are rarely found even in low dilutions.

SUMMARY

1. Organisms of the typhoid group grown at room temperature furnish a more sensitive antigen for agglutination tests than those grown at incubator temperature. The room-grown organisms yield an antigen that has about the same degree of agglutinability as the Dreyer standard antigen.

2. General clinical reactions to the triple typhoid vaccine are less numerous and less severe after the third injection than after the first and second.

3. The triple typhoid vaccine produces a good agglutinin response in the majority of persons to each of the three organisms included.

4. The agglutinin response is not influenced to any significant degree by (1) previous vaccination, (2) previous typhoid fever, (3) previous vaccination and typhoid fever, or (4) the degree of the general clinical reactions.

5. Lytic bodies against *B. typhosus* and *B. paratyphosus* A are frequently present in normal and immune human serums, and they may interfere seriously with the agglutination test made with active serums. They are not found in immune rabbit serums.

ABSTRACT OF DISCUSSION

DR. WILLIAM OPHULS, San Francisco: I can confirm from personal experience the superiority of the room-grown cultures. We never used any others when we did this work, and they certainly react much more promptly than the incubator-grown cultures.

DR. R. A. KILDUFFE, Los Angeles: I should like to ask Dr. Brem whether he had any personal experience with the observation reported by O'Hara of Boston which tends to show that in a typhoid case with a dropping agglutinin titer, while the clinical condition of the patient remains unchanged, the prognosis tends to be bad. He reported a small series of cases apparently showing this to be the case. I was able to follow the same phenomenon in an isolated instance—which, of course, is of little significance.

DR. WALTER V. BREM, Los Angeles: I cannot say very much in answer to Dr. Kilduffe's question. When we made agglutination tests every three days in our typhoid cases we were using incubator-grown organisms which were not very sensitive. We not infrequently encountered cases with a rising agglutination test which became positive only once or twice during the whole course of the disease, and then became negative again; but we did not receive the impression when they became negative that the patients did any worse than the others. We have had several cases that went entirely through the initial attack of typhoid and subsequent relapse without a positive agglutination test, and then during recrudescence, or third relapse, their tests became positive. I do not have the impression that there is any definite relation between the agglutination and the prognosis. The question that has arisen is whether or not there is some relation between the lytic bodies and typhoid immunity. However, these lytic bodies occur in normal serums and apparently are not produced or are not influenced very much by the vaccination. Now, are the persons who do not have these lytic substances the ones that are susceptible to typhoid? Is it not a little difficult to conceive of a person who is strong in these lytic substances harboring typhoid bacilli which dissolve in lytic serums like sugar? On the other hand, we see in rabbits a marked natural immunity, and yet rabbits possess no lytic antibodies against typhoid. On the other hand, rabbits will respond to vaccination with tremendous concentration of complement fixing bodies. I am almost ashamed to say that one of our rabbits showed complement fixation with a one to two billion dilution of the serum. The observation was carefully checked up. Several times fixation occurred with dilutions greater than 1:100,000. Human serum very rarely shows complement fixing bodies, but is often strong in lytic bodies. It is a very interesting study to compare the antibody reactions of rabbits and human beings. We do not know just what is the relation between antibodies and immunity.

THE ADMINISTRATIVE VALUE OF THE VIRULENCE TEST FOR DIPHTHERIA BACILLI

WITH A REPORT ON THE USE OF FIELD CULTURES *

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The contention of Loeffler [1] that virulent diphtheria bacilli can be differentiated from nonvirulent strains only by animal inoculation was lost sight of following the claim of Neisser [2] that a differentiation can be made by means of special stains. It has therefore become customary to quarantine persons found to be harboring organisms diagnosed on morphologic examination alone as diphtheria bacilli. The realization of the fact that the morphology of the organism is no criterion of its toxin production, and that persons quarantined on morphologic evidence often constitute no menace to the public health, has made necessary some rapid, economical method of determining the virulence or nonvirulence of cultures morphologically diphtheria bacilli. So far, all attempts to differentiate by means of stains or cultural reactions have failed, and, at present, animal inoculation is the only method that has proved of any value.

The subcutaneous test for virulence, using pure cultures, requires two animals for each test and a period

* From the California State Board of Health.
* Read before the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

1. Loeffler, F.: Centralbl. f. Bakteriol. **2**: 102, 1887.
2. Neisser, M.: Differential Diagnose des diphtherie Bacillus, Ztschr. f. Hyg. **24**: 443, 1897.

of from three to four days to isolate the organism in pure culture, and from two to ten days to observe the inoculated animals. Wayson,[3] by using field cultures, was able to eliminate the time required to obtain the pure culture. This method, however, required the use of two animals for each culture tested, and a ten-day period of observation before giving a negative report.

The intracutaneous test for virulence with pure cultures used by Neisser [4] was modified by Zingher and Soletsky [5] so that it was possible to put from four to six tests on one animal and its control. This made the test more economical than the subcutaneous tests, and reduced the time necessary for a final diagnosis to seven or eight days. The use of pure cultures, in either the subcutaneous or the intracutaneous test, is open to the objection that the original culture may contain both virulent and nonvirulent organisms, and that the virulent strain may be lost in fishing and transplanting. That this is the case has been shown by both Havens and Powell,[6] and Bull and McKee.[7]

TABLE 1.—*Virulence Tests of One Hundred and Eight Field Cultures Taken During an Epidemic Classified According to Sources of Cultures*

Source	No. Morphologically Positive	Virulent		Nonvirulent	
		Number	Per Cent.	Number	Per Cent.
Convalescent cases.....	18	16	89	2	11
Contacts with cases....	27	16	59	11	41
Carriers.....	30	18	60	12	40
Contacts with carriers..	33	14	43	19	57
Totals.....	108	64	59	44	41

The intracutaneous test, using field cultures, devised by Force and Beattie,[8] not only shortens the time required in making the test, but also eliminates the possibility of losing the virulent strain in a mixed culture. From four to six tests can be put on one animal and its control, and the time required for a final reading is never more than four days, and usually only two or three days.

While this paper is primarily concerned with the administrative value of the latter test, a paragraph on the technic will not be out of place. When a field culture has been shown to contain organisms morphologically diphtheria bacilli, the growth of this original culture is washed off with 1 to 2 c.c. of physiologic sodium chlorid solution. Approximately 0.2 c.c. of this suspension is injected intracutaneously into the side of a white guinea-pig prepared by plucking and shaving. From five to six hours after inoculation, the animal is given a following protective dose of 200 units of diphtheria antitoxin. Beattie,[9] confirming the observation of Eagleton and Baxter,[10] found that this did not interfere with the local reaction but prolonged the lives of many animals that would otherwise have died when the toxin production outstripped the local necrosis. Each test is controlled by injecting the same amount of the culture intracutaneously into an animal that has been protected by a preceding dose of from 200 to 500 units of diphtheria antitoxin. From four to six tests can be put on a single pig. A characteristic necrosis develops in from forty-eight to seventy-two hours, if virulent diphtheria bacilli are present. The appearance of this lesion is well described by Force and Beattie.[8]

The reliability of the intracutaneous test using field cultures, in comparison with the subcutaneous test using field cultures, was demonstrated by Force and Beattie.[8] They showed that the intracutaneous test was less liable to be influenced by contaminating organisms than was the subcutaneous test, and in no instance did they get a positive result with the latter test and a negative with the former.

Their work was confirmed by Bull and his co-workers at Johns Hopkins University. Havens and Powell [6] found that, while they obtained 4 per cent. of positive reactions by the intracutaneous inoculation of pure strains from cultures that gave negative results with the field cultures, they obtained 3 per cent. of positive reactions with field cultures that were negative with pure cultures, and 13 per cent. of positive reactions with field cultures from which they were unable to isolate pure cultures. Bull [11] and Bull and McKee [7] found the intracutaneous field culture test to be more reliable than the intracutaneous or subcutaneous test with pure cultures. In one series of 136 cultures, proved virulent by the intracutaneous field culture test, only eighty-five pure cultures were isolated; in another series of thirty-one field culture positives, only twenty-six pure cultures were obtained. Every culture that proved positive in pure culture gave a positive result with the field culture, and they conclude "that more accurate results can be obtained by the whole culture test than by isolating pure cultures for virulence tests."

TABLE 2.—*Virulence Tests of Two Hundred and Fifty-Seven Field Cultures Classified as to Sources of Cultures and Prevalence of Diphtheria*

Series	Source	Prevalence of Diphtheria	Number of Cultures	Number Morphologically Positive	Number Tested for Virulence	Virulent		Nonvirulent	
						Number	per Cent.	Number	Per Cent.
1	Cases, contacts, carriers	Epidemic	4,200	757	108	64	59	44	41
2	Cases, contacts	Unknown	.....	...	70	49	70	21	30
3	School survey	Epidemic	108	3	3	3	100	0	0
4	School survey	Epidemic	43	5	5	4	80	1	20
5	School survey	Epidemic	71	8	8	3	37	5	63
6	School survey	Epidemic	65	14	14	5	36	9	64
7	School survey	Prevalent	364	46	11	3	27	8	73
8	School survey	Prevalent	210	9	9	2	22	7	78
9	School survey	Not prevalent	49	6	6	1	17	5	83
10	School survey	Not prevalent	252	44	23	2	9	21	91
	Totals.....		5,423	892	257	136	53	121	47

The hygienic laboratory of the California State Board of Health has, for more than a year, used the method of Force and Beattie [8] in the routine testing for virulence of cultures morphologically diphtheria bacilli. We report here the findings on several series of tests made of cultures taken under different condi-

3. Wayson, N. E.: The Laboratory Diagnosis of Diphtheria, Pub. Health Rep. 31: 3113 (Nov. 10) 1916.

4. Neisser, M.: Bakteriologie der Diphtherie, Centralbl. f. Bakteriol. Ref. 57, Supp. 1, 1913.

5. Zingher, A., and Soletsky, D.: An Economical Intracutaneous Method for Testing the Virulence of Diphtheria Bacilli, J. Infect. Dis. 17: 454, 1915.

6. Havens, L. C., and Powell, H. C.: The Use of the Original Diagnostic Culture for the Determination of the Virulence of Diphtheria Bacilli, Am. J. Hyg. 2: 234 (May) 1922.

7. Bull, C. G., and McKee, C. M.: The Whole-Culture Method of Testing the Virulence of Diphtheria Bacilli, Am. J. Hyg. 3: 103 (March) 1923.

8. Force, J. N., and Beattie, M. I.: An Intracutaneous Test for the Virulence of Diphtheria Bacilli in Field Cultures, Am. J. Hyg. 2: 490 (Sept.) 1922.

9. Beattie, M. I.: The Effect of a Following Injection of Diphtheria Antitoxin on the Intracutaneous Test for the Virulence of Diphtheria Bacilli, Am. J. Hyg. 2: 656 (Nov.) 1922.

10. Eagleton, A. J., and Baxter, E. M.: The Virulence of Diphtheria-Like Organisms: A Note on the Intracutaneous Test, Brit. M. J. 1: 775 (May 28) 1921.

11. Bull, C. G.: Points of Interest in the Microscopic Diagnosis of Suspected Diphtheria Cultures, I, Observations Made in a Survey for Carriers Among School Children, Am. J. Hyg. 3: 90, 1923.

tions, and draw attention to the administrative value of the test.

RESULTS OF TESTS

The first series consists of 120 virulence tests of cultures taken during an extensive epidemic of diphtheria in a town of about 5,000 population and the surrounding country district. This epidemic had reached such proportions that the California State Board of Health was asked to take charge of the situation. On account of the large number of cases and their wide distribution, it was necessary to resort to taking wholesale cultures of the school children. We realized that by this method many persons who were carrying nonvirulent organisms would be placed in quarantine, but it seemed the most efficient way in which rapidly to control the epidemic. As soon as the epidemic was under control, we turned our attention to determining the virulence of the organisms present in the persons who had been placed in quarantine on a morphologic diagnosis of diphtheria. It was here that the test of Force and Beattie [8] proved of great value, for, as our work was done in a field laboratory, none of the other methods of testing for virulence would have been feasible. One hundred and twenty tests were made, of which sixty-four were positive, and forty-four were negative. We were unable to read twelve tests on account of the early death of the animals, as at this time we were not using the following dose of antitoxin. The results of 108 tests on 103 persons are given, grouped as to source of culture, in Table 1. Five of the cultures were second cultures from the same persons. The virulence test of the second culture agreed with that of the first in three instances; but in two, the second culture was positive while the first had been negative. In both of these tests, the first test had been made with a forty-eight hour instead of a twenty-four hour culture, and it is possible that the virulent diphtheria bacilli were overgrown by more rapidly growing contaminating organisms. However, we do not feel that this detracts from the value of the test, as Force and Beattie [8] had the same experience in which the animal inoculated subcutaneously showed a positive reaction following a negative test as well as the animal inoculated intracutaneously.

Series 2 is a group of seventy tests made of cultures from cases and contacts that had been in quarantine for thirty days or more. These cultures were obtained in the routine diphtheria work of a county health department. Of the seventy tests, forty-nine, or 70 per cent., were positive.

Series 3 to 6 consist of tests of positive cultures found in school surveys where diphtheria was epidemic. Of this group of thirty tests, fifteen, or 50 per cent., were positive; but the different series varied from 36 to 100 per cent. of positives, according to the prevalence of the disease and the degree of exposure.

Series 7 and 8 were school surveys made when diphtheria was more prevalent than usual, but in no sense epidemic. Of these twenty tests, five, or 25 per cent., were positive.

Series 9 and 10 are two groups of tests made of cultures taken from school children when diphtheria was not prevalent. In this group of twenty-nine tests, only three, or 10 per cent., were positive.

TABLE 3.—*Summary of Virulence Tests Classified According to Sources of Cultures and Method of Testing*

Observers	Source or Prevalence of Diphtheria	Cultures Used	Method of Inoculation	Morphologically Positive	Virulent		Nonvirulent	
					Number	Per Cent.	Number	Per Cent.
Nuttall and Graham-Smith: Bacteriology of Diphtheria, 1908, p. 232	Cases, contacts	.....	.....	112	86	77	26	23
Von Sholley: J. Infect. Dis. **4**:337, 1907	Noncontacts	Pure	Subcutaneous	56	18	32	38	68
	Contacts	Pure	Subcutaneous	20	14	70	6	30
Williams: J. M. Res. **8**:83, 1902	Carriers	Pure	Subcutaneous	27	5	18	22	82
Wayson: Pub. Health Rep. **31**:3113 (Nov. 10) 1916	Epidemic	Pure	Subcutaneous	37	15	41	22	59
Perkins, Miller and Ruh: J. Infect. Dis. **18**:607 (June) 1916	Noncontacts	Pure	Subcutaneous	18	0	0	18	100
Weaver: J. Infect. Dis. **20**:125 (Feb.) 1917	Cases, contacts	Pure	Subcutaneous and intracutaneous	50	50	100	0	0
Kolmer, Woody and Moshage: Am. J. Dis. Child. **11**:257 (April) 1916	Cases	Pure	Subcutaneous	551	296	54	255	46
Kolmer, Woody and Moshage: J. Infect. Dis. **11**:56, 1912	Cases, contacts, carriers	Pure	Subcutaneous	159	68	42	91	58
Smeeton: J. Infect. Dis. **21**:254 (Sept.) 1917	Cases	Pure	Subcutaneous and intracutaneous	37	23	62	14	38
Cary: J. Infect. Dis. **20**:244 (March) 1917	Cases	Pure	Subcutaneous	23	20	87	3	13
Beckler, Gillette and Parker: J. Infect. Dis. **29**:577 (Dec.) 1921	Epidemic	Pure	Subcutaneous	38	36	95	2	5
Simmons, Wearn and Williams: J. Infect. Dis. **28**:327 (April) 1921	Contacts	Pure	Subcutaneous	27	13	48	14	52
	Cases	Pure	Subcutaneous	13	11	85	2	15
Wadsworth: J. A. M. A. **74**:1633 (June 12) 1920	Cases	Not stated	Not stated	380	337	89	43	11
	Contacts	Not stated	Not stated	115	85	74	30	26
	Noncontacts	Not stated	Not stated	53	18	34	35	66
Blanton and Burhans: J. A. M. A. **72**:1355 (May 10) 1919	Cases	Pure	Subcutaneous	12	7	58	5	42
	Carriers	Pure	Subcutaneous	24	3	12	21	88
Goldberger, Williams and Hachtel: Bull. 101, Hyg. Lab., U. S. P. H. S., 1915	Noncontacts	Pure	Subcutaneous	19	2	12	17	88
	Cases	Pure	Subcutaneous	30	29	96	1	4
Hachtel and Bailey: Am. J. Pub. Health **10**:42 (Jan.) 1920	Contacts	Pure	Subcutaneous and intracutaneous	100	97	97	3	3
Guthrie, Gelien and Moss: Bull. Johns Hopkins Hosp. **31**:388 (Nov.) 1920	Noncontacts	Pure	Subcutaneous	99	11	11	88	89
Moss, Guthrie and Gelien: Tr. XV Cong. Hyg. & Demog. **4**:156, 1912	Noncontacts	Pure	Subcutaneous	33	6	18	27	82
Wade and Vaughan: Am. J. Pub. Health **10**:426 (May) 1920	Noncontacts	Not stated	Not stated	128	6	5	122	95
	Noncontacts	Not stated	Not stated	417	6	1	411	99
	Cases	Not stated	Not stated	570	561	98	9	2
	Contacts	Not stated	Not stated	95	93	98	2	2
Havens and Powell: Am. J. Hyg. **2**:234 (May) 1922	Cases, contacts, carriers	Pure	Intracutaneous	295	263	89	32	11
	Cases, contacts, carriers	Field	Intracutaneous	341	305	89	36	11
Bull: Am. J. Hyg. **3**:90, 1923	School survey	Pure	Intracutaneous	338	85	25	253	75
	School survey	Field	Intracutaneous	338	136	40	202	60
Bull and McKee: Am. J. Hyg. **3**:106 (March) 1923	Noncontacts	Pure	Intracutaneous	198	26	13	162	87
	Noncontacts	Field	Intracutaneous	198	31	16	167	84
Force and Beattie: Am. J. Hyg. **2**:490 (Sept.) 1922	Cases	Field	Intracutaneous	98	74	75	24	25
	Contacts	Field	Intracutaneous	53	22	41	31	59
Totals				5,102	2,858	56	2,244	44

The results of these tests are shown in Table 2. A summary of this table shows that, of the 257 tests, 136, or 53 per cent., were positive, and 121, or 47 per cent., were negative. This means that 121 persons had been held in quarantine when they were no menace to the public health. A study of Tables 1 and 2 shows that the percentage of virulent cultures depends on the degree of exposure and the prevalence of the disease. In other words, persons who harbor organisms morphologically diphtheria bacilli, but give no history of contact with a case of the disease, and persons found to be carriers during a school survey when diphtheria is not epidemic, are ordinarily carrying nonvirulent organisms. Therefore, from an economic standpoint, the virulence test is of more importance in these casual carriers than in recovered cases.

The percentage (53) of virulent cultures obtained by us probably represents a fair average, as will be seen from a comparison with the results obtained by others shown in Table 3. During 1922, 5,190 cultures were reported positive for diphtheria by the state hygienic laboratory on a morphologic diagnosis. This represents cultures from at least 1,730 persons (assuming that three cultures were examined from each person found positive). If virulence tests had been made on these cultures, 713 persons would probably never have been placed in quarantine, or would have been released in a few days.

The people are demanding, and rightly so, that our public health procedures be based on scientific facts and common sense. They are learning rapidly that persons quarantined as diphtheria carriers on morphologic evidence are often of no danger to others.

The virulence test gives us a means of identifying those persons who may spread the disease. Such persons should be segregated or kept under observation, and public opinion will back the health officer in those cases. Public opinion, however, will not uphold the health officer in the unjust quarantine of a carrier incriminated on morphologic evidence alone. No healthy carrier should be quarantined on such evidence, and the health officer who neglects to use the virulence test lays himself open to public criticism and reversal in the courts.

CONCLUSIONS

The intracutaneous test for virulence, using field cultures, has proved a rapid, economical method for testing the virulence of diphtheria bacilli.

The general use of this test would result in great economic saving by preventing the unjust quarantine of persons who carry nonvirulent diphtheria bacilli.

ABSTRACT OF DISCUSSION

DR. JOHN N. FORCE, Berkeley, Calif.: During the period immediately preceding the recent war, I was a member of the board of health of Berkeley, and had abundant opportunity to secure impressions concerning the public attitude toward the quarantine of diphtheria carriers. The opposition was particularly strong when it became necessary to secure cultures from the pupils of a school in which diphtheria had appeared. It seemed most unreasonable to parents that their children should be excluded when no contact with diphtheria could be established. However, all children showing such cultures were excluded from school and quarantined. I had repeatedly urged the use of virulence tests in these cases, but the technic was so beset with difficulties for our small city laboratory that my suggestions were not enthusiastically received. Local opposition reached its height in 1920, when 223 carriers were excluded from a high school population of 1,441 in which five cases of diphtheria had occurred. Postponement of readmission of these carriers until two morphologically negative cultures had been secured resulted in two weeks' loss of school for 50 per cent., and more than three weeks' loss of school for 10 per cent. of those excluded, to say nothing of some unpleasant legal experiences with particularly belligenent parents. During this period, we tested release cultures by the intracutaneous field culture method, and found them uniformly nonvirulent though morphologically positive. Almost simultaneously we had the opportunity of testing a group of morphologically positive cultures secured by the state board of health in the course of a school survey of a small town in northern California. Again our results were negative in the noncontact group, and we were stimulated to attempt a study of the virulence of diphtheria bacilli with reference to the sources from which they were obtained. We examined 200 morphologically positive cultures, and in no instance did we find a virulent organism from a person who had not been in definite family contact with a case of diphtheria. Of course, our cultures were random samples. They were not segregated according to the diphtheria "saturation" of the community. The experience, however, convinced us that an immense amount of school time and money is being lost by the unjust practice of excluding children from school on the basis of morphologically positive cultures. To Dr. Wayson should be given credit for first using the field culture intracutaneous test. He did not publish his results. Dr. Kelly's paper is the fourth that has been presented recently on the field culture intracutaneous test, but public recognition should be accorded at this time to Dr. Wayson for stimulating the use of field cultures instead of the older time-consuming method of pure culture isolation.

DR. N. E. WAYSON, San Francisco: We cannot emphasize the point too much that oversanitation has much to do with the difficulty of popularizing legitimate sanitation work. Although we have known of morphologic diphtheria, we have been very slow to determine how the virulence could be reached in a practical manner. The biologic test is the only criterion at hand today for the determination of the ability of the diphtheria bacillus to do harm. There are numerous points which might be brought up as to the impracticability of isolating pure cultures for virulence determination, but I believe it is almost the consensus of opinion that it is not practicable. The field culture method is apparently the method of the day. Dr. Force has devised a scheme which is rather economical, and which in his hands, and those of the gentlemen who confirm his verdict, including Dr. Kelly, has been satisfactory. I am in hopes that his test will outweigh in its usefulness that which seems to be faulty, namely, the dependence on clinical manifestations in the skin of a guinea-pig. The Hygienic Laboratory of the Public Health Service at Washington, D. C., has for a long time been engaged in the control of the manufacture of biologics, and has found that it is almost absolutely necessary to devise a method, in potency and toxicity tests, which is final, and which may be standardized. The final biologic test is the death of the animal. That can be left to the laboratory technician. There is no difficulty to determine when there is a reaction, if the test is the death of the animal. I rather regret that Dr. Kelly, in his field work, did not pursue Dr. Force's line of work, namely, the balancing of a final biologic test against Dr. Force's clinical test. I think that would have been very interesting, and it may have contributed a good deal. It seems to me that Dr. Kelly has definitely shown that we are unnecessarily quarantining a great number of people, and that the Force test for deciding the necessity of quarantine is a practical test in the hands of a trained worker such as he is. Health officers should have reached the point that widespread quarantine of what is presumed to be diphtheria should be practiced only after virulence tests have been made by trained workers.

DR. FRANK L. KELLY, Berkeley, Calif.: We made our tests under conditions in which it would have been absolutely impossible to follow Dr. Wayson's suggestion. The work was done in a small town. Our laboratory consisted of a room in one of the hotels. The animal house was in a woodshed in the alley. We made 120 virulence tests in ten days.

This could not have been done using any other test than the intracutaneous test with field cultures, because we could not have taken enough equipment into the field to isolate pure cultures, and it would have been absolutely impossible to get animals necessary for the subcutaneous test.

ACTIVE IMMUNIZATION AGAINST DIPHTHERIA IN PRIVATE PRACTICE *

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Protection against diphtheria needs not only the activity of an efficient health board in each community, but also the assistance of the private and dispensary physician; for it is from him that advice is sought. It is with the hope of creating more active general interest in this subject that this paper is presented.

INCOMPLETE CONTROL OF DIPHTHERIA

To diagnose this disease correctly is the duty of the practicing physician, for on him rests the responsibility of early administering antitoxin as a curative or prophylactic measure, and of urging the safeguarding of other individuals by isolation and quarantine. Passive immunization and isolation have their definite place, but that they have not been effectual in eradicating the disease is known to all, to a disappointing extent when one reads our recent statistics.

Since the last session of the American Medical Association, from June 1, 1922 to April 1, 1923, there have been in thirty states covered by the Public Health reports 102,042 cases of diphtheria, and up to Jan. 1, 1923, 5,584 deaths.[1]

For each hundred thousand of our population there is a yearly death rate of 15 individuals, as will be seen from these figures: 1921, 16; 1920, 15.3; 1919, 14.7; 1918, 13.9; 1917, 16.6; 1916, 14.5; 1915, 15.7; 1914, 17.9; 1913, 18.9.[2]

For each hundred thousand inhabitants there has been for ten years an average of 202 cases, eight of every hundred patients dying.

CAUSES OF LARGE MORBIDITY AND MORTALITY

Isolation of a patient with sore throat in a house is often delayed because of ignorance of the disease or of uncertainty that it is transmissible. Many families call no physician. When a physician is summoned there may be uncertainty in his mind, and still further delay results while a clinical or laboratory diagnosis is being made. The affected child may not be kept from school or from other outside associations unless he becomes too sick to be about, so that he and the other members of the family are carriers who broadcast diphtheria bacilli.

TABLE 1.—*Environment and Susceptibility*

	Per Cent. Schick Test Positive
Children in the least crowded schools and homes (Zingher, New York)	67
Children in the most congested schools and homes (Italian descendants giving the lowest percentage)	13.6
Private school boys from 8 to 18 (Fleischner, California)	65
Children in private practice (Neff, Kansas City)	70.8
Children (all ages) in Orphan's Home (Neff, Kansas City)	43.7

Failure to recognize the disease, delays in antitoxin administration and insufficiency of dosage frequently occur, and these are the factors that permit the fatal outcome. Our contagious disease hospitals are clearing houses for neglected cases, and the staff of such institutions knows well the disappointing and unsatisfactory way in which diphtheria is at present frequently handled.

Susceptibility to the disease is due to the lack of sufficient natural antitoxin (less than one-thirtieth antitoxin unit per cubic centimeter of blood). In severe and fatal cases, much toxin is elaborated, and the patients have little if any natural antitoxin to neutralize the toxin, and none is developed toward establishing an immunity. Such are the children who have never before had the disease or developed any contact immunity.

Private practice, especially among the pediatricians, deals with families who are trying to keep their children well. These children are better protected from exposure and, as a result, if exposed, more likely to develop diphtheria. Repeated contact with diphtheria bacilli usually confers immunity.

In studying the boys as they entered a school in England, Dudley[3] found that those newly admitted were three times as susceptible to diphtheria as the older inmates (not because of age). During an outbreak of diphtheria, the older inmates were the ones who did not succumb to infection.

TABLE 2.—*Rural Children in Vermont (Schick Test)* *

Age	Number of Children Tested	Reaction: Positive	Reaction: Negative	Per Cent. Positive
From 5 to 9	721	580	123	81.4
From 10 to 14	849	626	203	75.4

* Kidder: C. W.: Pub. Health Rep. **38**: 663 (March 30) 1923.

The high percentage of susceptibles among the more protected children of the cities has been observed by Park and Zingher, Fleischner[4] and others, as shown in Table 1.

Some observers have noticed the marked susceptibility of children in remote districts in the country, as shown in Table 2.

The susceptibility of country children is of striking significance in such an acute and urgent illness as diphtheria, when one considers the frequent inaccessibility of the physician and antitoxin. One hopes that this statement from a medical officer[5] in rural Pennsylvania will become true: "A little more time and a little more education and we shall have the Schick test and toxin-antitoxin in the country school."

DESIRABILITY OF ACTIVE IMMUNIZATION

From the foregoing outline of the prevalence, susceptibility, mortality and disappointing state of our handling of the diphtheria problem, it is obvious that we are in need of better or additional means for controlling and eradicating the disease.

As stated by Schick,[6] the best method of producing immunity to a disease is by active immunization. In

* Read before the Section on Diseases of Children at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

1. Lloyd, B. J.: Personal communication to the author.
2. Pub. Health Rep., Jan. 13, 1922.
3. Dudley, S. F.: Brit. J. Exper. Path. **3**: 204 (Aug.) 1922.
4. Fleischner, E. C., and Shaw, E. B.: Management of a Diphtheria Outbreak in a Private School, J. A. M. A. **77**: 1714 (Nov. 26) 1921.
5. Bashore, H. B.: Fighting Diphtheria in the Country, J. A. M. A. **78**: 189 (Jan. 21) 1922.
6. Schick, Bela: Boston M. & S. J. **188**: 255 (March 1) 1923.

the case of diphtheria prevention, active immunization is durable; passive immunization is transient, lasting only a few weeks. If the child from the age of 6 months to 6 years—the period of greatest susceptibility and mortality—can be rendered immune by a method that is safe, practical and inexpensive, compared with the great economic loss of diphtheria illness, there is no reason why this health-saving and life-saving method should not be used. The same holds true with the smaller number of older children and adults who are susceptible.

In answer to the criticism that active immunization can never be general enough to eradicate the disease, one must say that no other measure now available seems likely to do so. The present generation of children and every new one must be protected. When one observes the simplicity of the injections with toxin-antitoxin, when one recalls the difficulties often attending the detection, isolation and handling of the actual disease, one feels that the advantages are with active immunization. It will be an easier matter for the average physician to give toxin-antitoxin to the well person than always to diagnose correctly, and to treat successfully clinical diphtheria as it comes to him, often late.

PUBLIC SCHOOL AND INSTITUTIONAL IMMUNIZATION AS A PROTECTIVE AND EDUCATIONAL METHOD

Diphtheria immunization of large numbers of children in the public schools and in other institutions has become well known, primarily in this country through the work of the New York health department, as carried on by the untiring efforts of Park and Zingher and their associates. The educational value of this experience in New York will be easily accepted in other communities as soon as it is known that the excellent statistics of that city now show a definite decrease in the incidence of diphtheria. School immunization is undoubtedly the most complete way of reaching all children of school age, and there is carried into the home the knowledge of the possibility of protection for the younger child.

From 70 to 80 per cent. of all diphtheria is found in children under 5 years of age. The number of contact cases here will be greatly decreased if the children attending school are immunized. The immunization of the preschool child depends largely on the efforts of physicians in private and dispensary practice. The many asylums and welfare stations offer opportunities for reaching many children who are not in school. Local health boards and child welfare organizations should circularize all physicians and families in their communities. Publicity by street car advertising, such as is being done in Baltimore, New York and other cities, offers an opportunity of reaching all classes.

It is to be hoped that the Children's Bureau in its work throughout the United States will help in education of the public along this line. Zingher [7] states that concentration of effort on the preschool age group is the most important phase of this work. It has taken many years for the knowledge of smallpox prevention to be accepted, and vaccination is a long way from being universal. However, vaccination against smallpox is prompt in its protection, and its good effects have been frankly demonstrated and accepted by all health authorities. In private practice during a recent smallpox epidemic in our city, few cases appeared, as there were few persons in one's regular practice who remained unvaccinated. Diphtheria immunization, to become widespread and thorough, needs to take advantage of all the foregoing methods of reaching the public, and must be accepted and practiced by the general medical profession.

7. Zingher, Abraham: Personal communication to the author.

OUR OPPORTUNITY TO EDUCATE THE COMMUNITY

An investigation in our city confirms the fact, which many physicians already knew, that the great majority of families have no constant family physician, and they call in whoever may be available, and then only in case of illness. There is lacking in most families the knowledge of the benefits to be obtained by the scientific prevention of disease.

PREVENTION OF DIPHTHERIA

Children of the preschool age are usually susceptible to diphtheria. It has been found advisable to give them three injections of toxin-antitoxin, from which nearly all become immune in the course of a few months or within a year. At the end of six months the Schick test is made on the arm, and if this is not negative, another series of three injections may be necessary to complete the immunization process.

Children of school age are less susceptible, but a considerable percentage will get diphtheria. To determine which children need the toxin-antitoxin, the Schick test is made and those found susceptible are immunized; six months later the test should be again made, and, if still positive, a second series of injections is given.

This preventive "vaccination" should not be confused with the ordinary antitoxin which is sometimes given to children who are definitely exposed to a known case or epidemic of diphtheria. "Vaccination" against diphtheria takes several months before the child becomes immune, and will not protect immediately after it is done, but will finally result in an immunity which probably lasts for life.

Name .....

Address .....

Preliminary Schick test: Date.....Positive.... Negative....

Toxin-antitoxin was given on { ....

Date for subsequent Schick test.....

Result.....

This child is now immune to diphtheria.

Date..... Physician.....

Card stating the accepted facts about diphtheria immunization.

The busy physician has his time taken up with calls on the sick or near sick, and he finds he must rearrange his schedules and methods if he is to add preventive treatment to his daily program. Unless they are directly asked, many physicians hesitate to suggest measures which they may feel will be misunderstood as aggressive or unnecessary. When a method of disease prevention such as diphtheria immunization has been proved and established, the physician owes it to his clients to give them such information.

During the 1921 epidemic of diphtheria in Kansas City, toxin-antitoxin immunization was given considerable publicity, especially in the daily press; and during the time that the "scare" was current, there was marked interest on the part of parents in having their children protected. It is inadvisable to urge active immunization at such a time except with the definite statement that toxin-antitoxin takes too long to give immediate protection from diphtheria. The Schick test during the epidemic, used in children beyond the age of 3 years,

was urged as a routine, and its usefulness was appreciated by physicians and parents.

Between epidemics the public becomes indifferent. This is unfortunate, for at such a time immunization is best performed.

THE SCHICK TEST IN PRIVATE PRACTICE

Some difficulty is encountered in carrying out the preliminary Schick test. From the physician's standpoint it is not always convenient, nor is one always prepared to have the test and control solutions available for occasional use. This can be overcome by having a certain day each week when children are to come in for this purpose. A week later they return for reading the test. As a detail it is well to give the Schick injection first, so that in nervous or frightened children the control test may be omitted if desired. It is a frequent observation that a child will bear one injection but may strenuously resist the approach of the needle the second time. Intradermal tests require a precision which is not needed in the toxin-antitoxin administration. Fortunately, in this regard the test may be omitted, especially under the age of 5.

Reading the test is not so convenient in private practice as in institutional work. A few children do not return, and some others do not appear on the exact day appointed, so that one of the advantages is lost, namely, the careful observation of the tests and the amount of protein reaction.

Children of the preschool age seldom show these pseudoreactions. The incidence of susceptibility or immunity in a family is interesting. In some families all the children may be immune; in others all may be susceptible; or, if there are both negative and positive reactors in a family, the younger children will give the positive test in most families (75 per cent.).[8]

Details of the Schick test cannot be given in this paper, but will be found in every package of the toxin, and especially in the recent description by Park and Zingher.

ADMINISTRATION OF TOXIN-ANTITOXIN

As soon as a positive Schick reaction is observed, or if this test is omitted, 1 c.c. of toxin-antitoxin is given, irrespective of the age of the patient, and the child returns to the office or is visited at the home every week or every other week for a total of three injections, on the special day for this work. The use of the refined toxin-antitoxin, which contains one-tenth lethal plus dose, underneutralized,[9] gives little local or constitutional reaction. My experience agrees with that of Park,[10] that one has no fear of severe reactions in toxin-antitoxin as now perfected, especially in children. The family is then notified of the exact date thereafter when a retest is to be made for determining the development of immunity. The parents are informed in the beginning that, if the retest is still positive, a second or rarely a third course of toxin-antitoxin may be necessary. One meets with difficulty in keeping the interest and cooperation of some parents for the later tests. This is an individual matter, however, and is similar to the carelessness with which many people regard the persistence of follow-up examinations and treatment.

At the playgrounds, baby and health stations in New York City, from one third to two thirds of the children completed the three injections of toxin-antitoxin. Our experience has been that only rarely are the three injections uncompleted.

When diphtheria becomes prevalent, the child may be brought in voluntarily for a Schick retest.

The assistance of a careful nurse in the preparation of the solutions and of a clerk in recording data will be found of help to the busy physician who does any considerable amount of this work. One must depend on records for later information as to results and dates. These are well kept in a special book for this purpose. The fact of immunity is recorded on the child's history card. Work of this kind is full of detail, but is unobjectionable when systematized.

In order that one may carefully impart to inquiring parents the facts about diphtheria immunization, a typewritten or printed card has been prepared which briefly and carefully states accepted facts.

One of these cards is retained by the family for future reference. The date to return for the retest is written on this card when toxin-antitoxin has been given. When the child has become immune, this card is signed by the physician and may be used as a certificate.

CONCLUSIONS

The medical profession should be aroused to the need and usefulness of active immunization to diphtheria.

Routine private practice must include the education of families in the use of toxin-antitoxin. It is obvious that the medical profession will be the final authority with the public as to the desirability of diphtheria immunization.

The systematic administration of toxin-antitoxin is easy, and if employed in private practice the demand for it will eventually reach throughout the community.

The use of refined toxin-antitoxin as now available is safe, and the physician need have no hesitancy in making diphtheria immunization a part of his regular work.

It is conservative to state that 90 per cent. of persons receiving toxin-antitoxin develop immunity, and that there is a small percentage of persons who develop antitoxin poorly, if at all. That there are a few exceptions can be recognized.

No child should be accepted as certainly immune until a negative Schick test is obtained.

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8. Zingher, Abraham: Diphtheria Prevention Among Children of Preschool Age, J. A. M. A. **80**: 456 (Feb. 17) 1923.
9. Rohmer, P.: La vaccination antidiphtherique, Arch. de méd. d. enf. **26**: 1, 1923.
10. Park, W. H.: The Toxin-Antitoxin in Prevention of Diphtheria, New York State M. J. **23**: 1 (Jan.) 1923.

ABSTRACT OF DISCUSSION

DR. E. J. HUENEKENS, Minneapolis: The use of toxin-antitoxin has gone far beyond the experimental stage. Attention has been called to this repeatedly by Park and Zingher, but, so far as I know, Dr. Neff was the first to call attention to the use of toxin-antitoxin in private practice. The use of toxin-antitoxin is even more important for the preschool child than it is for the school children. There is this great difficulty, however, in using toxin-antitoxin in private practice: we have to proceed with the education of the mothers piecemeal,-one by one. That is the great rock on which the thing falls. The busy physician is not able to spend twenty or thirty minutes with each particular mother, showing her the necessity of these injections. Most mothers have heard of vaccination against smallpox, and that, with them, is an accepted fact; but this work is too recent. What we really require, above all else, is education of the people as to the value of this measure, and the fact that it has gone beyond the experimental stage. It would not be inopportune for this section to recommend it.

DR. C. A. EARLE, Des Plaines, Ill.: I have great hopes for diphtheria prevention now that pediatricians are beginning to countenance and use toxin-antitoxin. I have learned that not much work has been done along the line of active immunization against diphtheria in private practice. I am constrained to believe that much of the passive, not to say active, opposition of the family physician has been due to the influence of some pediatricians who have been too busy to study and appreciate the experimental work of Smith, Guthrie, Moss and others, and the practical work of Park and Zingher. There is a field for the family physician. He can and should become skilled in the use of the Schick test. In many instances it might be profitable for him to devote more time to diphtheria prevention and less to the indiscriminate removal of tonsils, circumcision and shotgun vaccines. My experience leads me to believe that, while there may be some objections to mass testing of children during the preschool age by public health authorities, in private practice all children above 6 months of age should be given the Schick test, not only because a certain number are naturally immune and do not subsequently need the toxin-antitoxin but because those who receive the toxin-antitoxin injections, must, at the end of five or six months, be retested to determine their immunity status. The family physician, in addition, needs all the practice that he can get. He who intends to preach and practice the gospel of modern diphtheria prevention must first do a little studying. He ought to know the difference between active and passive immunization. Above all, he should familiarize himself with the experimental work done by Smith, who, sixteen years ago, proved beyond a doubt that balanced mixtures of toxin and antitoxin produced lasting immunity in guinea-pigs. Moss, Guthrie and others, by showing that all the manifestations of diphtheria in the guinea-pig, including antitoxin formation, are identical in human kind, have forged the last link in a chain of evidence that makes the basis of modern diphtheria prevention unassailable.

DR. FRANK C. NEFF, Kansas City, Mo.: There are many things of interest connected with the Schick test and with toxin-antitoxin, but they could not be mentioned in this short time. If we have interested the men of this section in putting active immunization into practice, the object of the paper will be attained.

SYSTEMIC MANIFESTATIONS OF SUPPURATIVE DISEASE IN PARANASAL SINUSES *

M. F. ARBUCKLE, M.D.
ST. LOUIS

It seems worth while to record the results of some observations of cases in which certain constitutional disorders apparently have been caused by suppurative disease in the paranasal sinuses. The cases to be discussed include those of children and adults.

Until recently, there have been only a few physicians who have attached much importance to sinus disease in children because of the generally prevalent idea that in children the sinuses are in such a rudimentary stage of development as to be negligible clinically.

The experiences of Dean,[1] Sluder,[2] Lemere[3] and other investigators, as well as my own, have thoroughly convinced me that, in many instances, the portal of entry of many of the more serious ailments of infancy and childhood has been entirely overlooked. Furthermore, I am convinced that a large proportion of cases of chronic nasal disease of adult life, with the attendant constitutional manifestations, have existed as such since childhood.

We have, of course, all paid a certain amount of attention to constitutional disturbance secondary to sinus disease in adults, but I think that there are certain facts in this connection which may be profitably discussed.

Not infrequently there seems to be a sort of familial characteristic or predisposition to this sort of disease in certain families. For example, in one family, a boy, aged 11, was brought in to the St. Louis Children's Hospital for diagnosis. He had been treated for malaria and for tuberculosis, alternately, for about two years. He was a pasty looking child who did not eat, play, study or do anything that others of his age did. He had an irregular fever up to about from 100 to 100.5, and always had a cold in the nose, with headache much of the time.

Examination revealed a profuse suppuration in both sphenoid sinuses; most of the pus was going down the esophagus. The suppurative process yielded rather promptly to local treatment; the constitutional symptoms disappeared, and he was transformed into a normal boy.

There were two other children in this family, the younger aged 10 months, the older about 8 years. They also had nasal sinus suppuration, and the baby developed a troublesome infection of the cervical lymph nodes. The sinus infection and the glands cleared up with local treatment of the nasal condition. The father had a chronic sinus suppuration which had existed for years, and he was now having rather frequent attacks of headache.

Occasionally, a child fails to improve as it should after the removal of tonsils and adenoids. There is, in the majority of such cases, suppurative disease of the paranasal sinuses, and, with proper treatment, the results have been extremely satisfactory.

An accurate description of the sinuses in children is given by Schaeffer:[4]

> By the end of the first year the maxillary sinus is sufficiently developed in width to extend beneath the orbit.
>
> As a rule, one cannot be sure of the frontal sinus until the sixth to twelfth month of postfetal life.
>
> It must not be overlooked that even in early childhood the anterior and posterior groups of ethmoidal cells are fairly well established and subject to disease. The sphenoidal sinus in early childhood is more precocious than one would infer from diverse statements in the literature. They may come into intimate relationship with the ophthalmic and maxillary nerves and be a potent factor in childhood neuralgias of the trigeminal nerve even as early as the third year. It is obvious that the sphenoidal sinus is early of importance clinically and that by the second or third year has assumed proportions sufficiently large to become the seat of pathologic processes and to retain infectious material in its cavity.

In the St. Louis Children's Hospital and in private practice, we have had well authenticated cases of cardiac disease, nephritis, arthritis, bronchitis, erysipelas and a psychoneurosis in which the cause apparently was suppurative disease of the paranasal sinuses.

The description of Czerny's exudative diathesis by Birk[5] is remarkably similar to that of the condition found in infants who have suppurative disease in the nasal sinuses.

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* From the Department of Otolaryngology, Washington University Medical School.

* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

1. Dean, Paranasal Sinus Disease in Children, University of Iowa Studies in Medicine, April 15, 1921.
2. Sluder, G.: Asthma as Nasal Reflex, J. A. M. A. **73**: 589 (Aug. 23) 1919.
3. Lemere, H. B.: Arch. Pediat. **39**: 601 (Sept.) 1922.
4. Schaeffer, J. P.: The Nose, Paranasal Sinuses, Nasolacrimal Passageways and Olfactory Organ in Man, Philadelphia, P. Blakiston's Son & Co., 1920.
5. Birk: Diseases of Infancy.

In children of all ages we see occasionally a case in which there is acute illness with high fever, leukocytosis, vomiting, loss of appetite and headache, in which suppurative disease of the nasal sinuses is the only discoverable cause. A few cases of chorea of a severe type with heart involvement apparently have responded with unusual rapidity, after treatment of suppurative disease of the paranasal sinuses had been instituted. We have had two cases in which severe herpes zoster over the first division of the fifth nerve accompanied acute suppurative disease of the sphenoid.

Dr. W. McKim Marriott[6] recently said:

> One of the most frequent and most serious of the systemic manifestations of sinus infection in children is acute parenchymatous nephritis. This seems to be the result of infection in the sinuses, for when the sinuses are cleared up all evidences of nephritis promptly disappear. These changes are entirely independent of the diet.

He also mentioned several other constitutional manifestations which I will discuss at this time. I herewith report a few of the more typical cases.

CASE 1.—A. H., a girl, aged 4 years, admitted to the St. Louis Children's Hospital, Sept. 20, 1922, with acute parenchymatous nephritis, had had the usual diseases of childhood, including influenza. She was subject to frequent, protracted colds accompanied by cough and sore throat. Four months previous to admission, she had been exposed to cold and wet. The urine at that time was scanty and contained much albumin. She had been given the ordinary treatment without improvement. September 20, she had general anasarca. The weight was 20.5 kg. Albuminuria existed, with hyaline casts and low output.

The tonsils and adenoids were large; the cervical glands were somewhat enlarged on both sides. The tonsils and adenoids were removed, Sept. 22. The general anasarca became somewhat more marked after this operation. I saw her first, Oct. 6, at which time the nose was filled with crusts and pus. The antrums were normal. Pus came from above the middle turbinate on both sides. A culture proved to be pure *Staphylococcus aureus*. One per cent. mercurochrome-220 soluble was instilled high into the nose twice daily.

October 7, the weight was 20.15 kg.; the output of urine was 75 c.c., with much albumin and many hyaline casts. Her eyes were almost closed by the edema; the skin over the abdomen and legs was tense and shiny. She was and had been for some time on a restricted and entirely salt free diet.

October 8, the output of urine was 150 c.c.; the patient's weight was 20.09 kg., and the left thigh appeared to be smaller.

October 12, the output of urine was 1,300 c.c., and the weight was 13.8 kg.

October 13, there was no albumin and there were no casts in the urine. There was still a slight amount of pus in the nose, but very much less than on the first examination.

October 16, the weight was 12.72 kg., with no edema or ascites. The urine was normal. The diet was increased without recurrence of the retention of fluid. After this time, there were one or two slight recurrences of the kidney disturbance, but they subsided and the patient made an uneventful recovery.

I have been informed recently that she is well and has been since she went home.

CASE 2.—E. C., a boy, aged 12 years, with a history of heart disease of long standing, was readmitted to the St. Louis Children's Hospital, March 28, 1922, for further study of the paranasal sinuses. The family history was essentially negative. He had had rheumatism, which began in October, 1920, and acute endocarditis. He always had pus in the nose. He was undernourished. He had no pain or adenopathy. The heart was enlarged, and the cardiac impulse was plainly visible. A systolic murmur was transmitted to the axilla; a short presystolic murmur also was heard over the apex. There was no fluid in the abdomen. He had a moderate decompensation. For that reason, he was not allowed to sit up.

Examination of the nose and throat revealed a quantity of pus beneath the middle turbinate on both sides. By irrigation under nitrous oxid anesthesia, a large quantity of heavy, yellow pus was recovered from both maxillary antrums. Culture from this pus gave a large, lance-shaped gram-positive diplococcus, which was declared not to be a pneumococcus.

One week later, he came up for further examination and treatment. The antrums were irrigated again, and pus was recovered from the right side only. After two further irrigations about a week apart, the pus from the right side also disappeared. His condition was so much improved that he was sent to his home twenty-five miles away, with instructions to come in and see the pediatricians once a month. This was about eighteen months ago, and his condition has been good in the meantime. He is now in school and apparently doing well.

CASE 3.—W. B., a boy, aged 11 years, with chronic infectious arthritis, and mitral regurgitation, was admitted to the St. Louis Children's Hospital, April 4, 1922, with the complaint of "paralysis." He had had chickenpox and pertussis before he was 4 years of age; the history otherwise was negative until, at the age of 4 years, he had a sudden attack called rheumatism. There were no joint symptoms, but the head was drawn back and the heels were drawn up. He remained stiff for six months, and then had an apparent recovery. The adenoids and tonsils were removed in 1920. The onset of the present illness was in March, 1920. The eyes were watery; there was a rash on the face and skin, and he had pain in the left arm. He was put to bed and had not been up since. Remittent fever for ten or eleven weeks was followed for eleven months by fever of somewhat lower elevation. The heart rate at that time was very rapid.

The joint disorder began in August, 1920, with swelling of the ankles and elbows. There was pain on movement of the left knee, ankle and elbow, and great pain in the anterior part of the thighs. Other joint involvement followed, so that he now had involvement of the metacarpals, metatarsals, ankles, knees, hips, wrists and cervical vertebrae. The joints were first red and swollen and extremely painful, and later became stiff. He complained if any one touched his bed. The joints were becoming more and more fixed. He lay flat on the back with the knees flexed, and the hip joint extended laterally. The right arm could not be straightened, and the left arm was set at an angle of 135 degrees. No general adenopathy was observed, but there was depression of the sternum. The heart apparently was displaced slightly toward the left; there was a short systolic murmur not transmitted, and the rate was regular. Two fingers of each hand were sharply flexed at the first phalangeal joint. The skin felt curiously hard over the lower extremities. The lungs and urine were normal. Roentgen-ray examination showed extreme atrophy but no ankylosis. He had a fever up to about 103 or 104 at intervals of four or five days.

April 24, a nose and throat consultation was called. A small ulcer on the left side of the septum was found close to the floor. Both middle turbinates were hypertrophied. There was considerable dried secretion in the olfactory fissure, and a general chronic inflammatory reaction.

May 17, the patient had an increase in temperature, with precardial pain, slight sore throat, and an acute middle ear inflammation, which later subsided.

June 21, further nasal examination revealed dried secretions on the middle turbinate and above the middle turbinate on each side. Growth from the left side showed *staphylococcus aureus* in pure culture.

July 14, he had frontal headache and the nose was stopped up. July 25, the sphenoids and ethmoids were opened under gas anesthesia. After this operation, the temperature did not come up again on the four or five day intervals as it had previously done.

July 31, he was able to move the hip joints for the first time since entering the hospital. The sinuses were irrigated, and 1 per cent. mercurochrome-220 soluble was applied to their interior on a cotton swab.

6. Marriott, W. M.: Paper read before the St. Louis Medical Society, March 20, 1923.

October 15, he had gained considerable weight, and the legs could be straightened out somewhat. Since that time, he has had one or two mild illnesses, such as measles, but his improvement has been continuous, and he is now able to walk with braces and help. He was sent home recently.

CASE 4.—*Psychoneurosis secondary to sinus suppuration.* A man, aged 38, came to me on account of severe pain in the region of the right ear and mastoid, for which he had been unable to find relief. It was readily controlled by application of cocain to the nasal ganglion. He had a history of suppuration of long standing in the sphenoid-ethmoid region. Although much surgery had been done in the nose and throat, the sinuses had never been drained. He had a very marked hyperplasia throughout the sphenoid and ethmoid region on both sides, with only slight evidence of suppuration. He was subject to frequent attacks of cold, accompanied by severe headache, profuse nasal suppuration and marked toxemia, which left him unable to do his work. At this time, he was so extremely depressed that he felt life was not worth living. He could think of nothing but his troubles, and he told me that it was with the greatest difficulty that he controlled himself at times. It was decided to drain the sinuses, and this was done under local anesthesia plus scopolamin and morphin. He had great mental excitement while the effects of the scopolamin and morphin lasted. His nose healed gradually after the operation, which was performed, April 25, 1922. His general condition improved, and he told me, July 8, that when he got a cold he was not troubled by the feeling of depression. The earache disappeared, and later, May 14, 1923, he stated that he had had very little trouble with colds. He also said that in spite of the most severe mental and physical strain, there had been no return of the feeling of depression, and the appearance of the nose, as far as inflammatory reaction was concerned, very nearly approached normal.

CASE 5.—C. S., a woman, aged 25, admitted to Barnes Hospital, Nov. 20, 1922, had had malaise for the last few days and constant severe headache. Quantities of pus came from the upper nasal cells on both sides, and there was great swelling in the olfactory fissures, especially on the left side. In two or three days, she developed herpes zoster over the distribution of the ophthalmic division of the fifth nerve, which subsided on treatment of the suppurative processes in the nose.

Sometime later, she had a recurrence of the nasal disorder, with a recurrence of the herpes, which was permanently relieved, this time by surgical drainage of the sinuses.

CASE 6.—R. L. S., a man, aged 38, seen in consultation with Dr. George Dock, July 15, 1921, had at this time his second or third attack of bronchopneumonia. I was asked to see him because he had headache, nasal obstruction and great difficulty in getting air in and out of the lungs.

Examination revealed chronic bilateral sphenoid suppuration and pus in the middle meatus on both sides. The headache was relieved in a few minutes by the application of cocain to the nasal ganglion, and his breathing at the same time became easier. This was so noticeable to the patient that when, on two or three subsequent occasions, he had difficulty with breathing, which he described as an asthmatic feeling, he made a special request that his nose be "touched" again. This was done, with the result that breathing was made much easier.

CASE 7.—E. F., a man, aged 52, seen in April, 1923, had erysipelas of the face which started in the region of the ala nasi. He had chronic suppuration of the sphenoid and posterior ethmoid sinuses on both sides, which had existed for years. Prior to the time the erysipelas began, he had had no injury of any sort to the skin. I have seen a number of such cases in adults and children in which the only traceable source of the erysipelas was chronic suppuration of the nasal accessory sinuses.

CASE 8.—H. S., a boy, aged 20 months, seen in consultation with Dr. B. S. Veeder, had fever in the afternoon up to 104, and apparently was quite ill. He had leukocytosis and vomiting, with loss of appetite. Repeated general examination and careful study failed to reveal the cause of his illness, until it was discovered that he had pus in the upper nasal cells on both sides. Local treatment of this condition was followed by recovery within a very short time.

CASE 9.—A. C., a girl, aged 19 months, whose present illness started with fever and constipation, had swelling of the face and both eyes on the sixth day of illness; the temperature was around 104, and the patient was unconscious. Both eyes were greatly swollen and discolored. There was pus above and below the middle turbinate on both sides and in the throat. Blood cultures gave pure *staphylococcus aureus* on four occasions. Culture from the nose was pure *staphylococcus aureus;* the blood count was 40,000 white cells.

After about thirty-five days she had, in addition to the conditions mentioned above, pneumonia and pleurisy, followed by death.

Necropsy revealed: an abscess in the lateral wall of the nasopharynx about on a level with the fossa of Rosenmüller and external to it; thrombosis of the pharyngeal vein, jugular bulb; lateral and inferior petrosal and longitudinal sinuses, and cerebral veins; and encephalitis. In the nasal accessory sinuses, there was suppuration with necrosis of the posterior ethmoid and sphenoid cells on both sides. This process extended to and involved the optic nerve on both sides. There was orbital phlegmon on both sides, with sinuses leading to the skin.

CONCLUSIONS

1. The age of development of the sinuses and incidence of disease in them is much more youthful than it is popularly thought to be.

2. I do not, of course, wish to overestimate the importance of sinus disease in its relation to constitutional disease, but I do wish to emphasize the fact that it is of far greater importance and frequence than has generally been recognized.

3. The study and treatment of sinus disease must be done with proper equipment, to be satisfactory.

4. The results of treatment usually are extremely gratifying.

University Club Building.

ABSTRACT OF DISCUSSION

DR. E. LEE MYERS, St. Louis: I have come to the conclusion from my own experience that sinus infection is not only bacterial invasion, but also a draining of the body resistance as it affects the biochemistry of the system. This is confirmed by the work of Martin Fischer in acidosis. Suppose we have done a septum operation and straightened up the sinuses, possibly taken off a piece of the middle turbinate, and the patient is still neurotic, or has those symptoms. I believe that if we attack those cases on the basis of acidosis and try to change the patient's chemical reaction, we shall get better results. Along that line I have treated some of my patients with very good results. They eat large quantities of citrus fruits, drink magnesia magma and take sodium bicarbonate twice a day.

DR. DENNIS J. MCDONALD, New York: Dr. Arbuckle has brought before us in a concise way what a number of men heretofore have done in a slipshod way—the thorough examination of the child. He has brought to us conditions of the sinuses to which many of us several years ago had given little thought. He has shown us anatomic conditions which Shaffer has beautifully brought out in his plates. The early French writers made wonderful demonstrations of these sinuses. He has brought to our minds clearly that we should not do our work, particularly clinical work, in a slipshod way.

DR. I. D. KELLEY, JR., St. Louis: Those who have had the opportunity to follow Dr. Arbuckle's sinus work more closely in the St. Louis Children's Hospital feel that this question of systemic manifestations of sinus disease is of the utmost importance, especially because of the difficulty of examining the sinuses of a small child, and because it is such an easy matter to slight or overlook entirely this type of examination. Dr. Arbuckle has elaborated a procedure of examination that

is so definite and exact that I felt when he read this paper that a brief outline of his method of examination was of great importance. We all realize what pus infections will do in the accessory sinuses, but I feel confident that many of us do not realize the importance of a definite method of examination.

DR. C. A. BROADDUS, Salt Lake City: I have not had very much experience in sinus disease in children, but I have had quite a lot of it in adults in connection with my work with the Veterans' Bureau. I have seen many instances of systemic disease apparently originate from infection of the sinuses.

DR. M. F. ARBUCKLE, St. Louis: Dr. Kelly mentioned the method of examination. I depend chiefly on visual examination, with proper lighting and proper equipment. Of course, we make roentgen-ray examinations, and bacteriologic and blood examinations, but we place first in importance naked eye inspection of the nose and nasal cavities, both anterior and posterior, keeping in mind, at all times, the changes that take place as a result of inflammation. The diagnosis of inflammatory disease of the sinuses does not depend on the actual demonstration of a quantity of pus in the nose. The nasopharyngoscope is a great help. Many men use transillumination and depend on that. I have not been able to use transillumination with any satisfaction. These cases are subjected to surgical treatment only as a last resort and after local treatment has failed. The great majority of our patients have recovered with local treatment. However, when surgery is indicated it should be done. Our results after surgical intervention have been extremely gratifying.

ISOLATION OF BACTERIUM PNEUMOSINTES FROM INFLUENZA PATIENTS

DURING THE 1923 EPIDEMIC*

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The recurrence in January and February, 1923, of an acute respiratory disease resembling the epidemic influenza of 1918-1919, 1920, and 1922 afforded an opportunity to repeat the investigations of Olitsky and Gates [1] on the nasopharyngeal secretions of influenza patients, particularly to attempt the cultivation of *Bacterium pneumosintes* from these secretions. Prior to the onset of the 1923 outbreak, we were engaged in the investigation of the nasopharyngeal secretions from early cases of common colds in man by cultural methods similar to those employed in the studies on influenza. In this connection, it is of interest to record that we failed to obtain cultures of the bacterium from the cases studied.[2] If *Bacterium pneumosintes* could again be cultivated from the nasopharyngeal washings from patients with influenza, the relationship of this micro-organism to the latter disease would be strengthened.

In addition to the transmission and cultivation experiments, we shall report also the results of agglutination reactions with *Bacterium pneumosintes*, employing the serums from recovered patients of the 1923 epidemic.

SOURCE OF MATERIALS

A number of infections, some of obscure origin, of the upper respiratory tract occurred concomitantly with the onset and during the course of the epidemic of influenza. These ailments, not unusual for the season of the year, made the selection of cases of true, uncomplicated influenza difficult. Furthermore, we sought patients only in the early hours of the disease. Therefore, of the twenty persons who responded to our call for volunteers, only six were chosen as being representative of the type that prevailed during the pandemic of 1918-1919 and the subsequent recurrences of 1920 and 1922. In the selection of an early case of uncomplicated influenza for study, particular stress was placed on the occurrence of leukopenia affecting the absolute number of mononuclear cells, associated with symptoms and signs considered as typical of an influenzal attack. These consisted of an abrupt onset with chilliness, fever, prostration, headache, and muscular pains, especially in the back and limbs. Among the early symptoms were flush and suffusion of the face, injection of the conjunctivae, soreness of the throat, and a harsh, unproductive cough. The clinical course of Patient 1, a man, is described as illustrative of that of the other five patients studied:

> The onset was sudden, with frontal headache, chilly sensations and generalized muscular pains, especially in the back and extremities. There was marked prostration, although the temperature was only 38.9 C. (102 F.). Conjunctivitis was present, accompanied by photophobia. As the illness progressed, a dry and distressing bronchial cough supervened, but physical examination of the chest revealed no lung involvement. Other organs were not affected. After three days, following a profuse perspiration, the temperature fell to normal and the patient recovered. The dry cough and the prostration, however, persisted for several weeks thereafter. Twelve hours after the onset of the first symptoms, a blood count showed the total number of leukocytes to be 3,000, of which 600 were mononuclears. At this time the nasopharynx was washed [1] with 30 c.c. of Ringer's solution, and the washings were retained for study.

The remaining five patients corresponded in practically all the signs and symptoms to the one described, except in the total blood counts, which were, respectively, 4,800, 6,400, 3,800, 7,400 and 4,000 cells. The hour after onset in which the blood count was made and the washings secured from each of these five patients was, respectively, the forty-eighth, the twenty-fourth, the twenty-fourth, the thirtieth and the sixteenth.

RESULTS OF TRANSMISSION AND CULTIVATION EXPERIMENTS

A part of the nasopharyngeal washings from each case was filtered, and the filtrate was cultivated on anaerobic blood-agar plates and in the Smith-Noguchi fluid medium by methods already described.[3] The unfiltered material was injected intratracheally in rabbits [1] not only to study pathogenicity, but to aid in the cultivation of *Bacterium pneumosintes*, for it has already been determined [3] that a negative experience in the direct cultivation of this micro-organism without the help of animal passage is not conclusive.

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* From the Laboratories of the Rockefeller Institute for Medical Research, New York.
* These studies were made possible by the active cooperation and helpful assistance of Major Henry J. Nichols, Medical Corps, United States Army.

1. Olitsky, P. K., and Gates, F. L.: Experimental Study of the Nasopharyngeal Secretions from Influenza Patients, J. A. M. A. **74**: 1497 (May 29) 1920; Studies of the Nasopharyngeal Secretions from Influenza Patients, **76**: 640 (March 5) 1921; J. Exper. Med. **33**: 125 (Feb.) 1921; **33**: 713 (June) 1921; **36**: 501 (Nov.) 1922; Science **57**: 159 (Feb.) 1923.

2. To be reported in a forthcoming number of the Journal of Experimental Medicine.

3. Olitsky, P. K., and Gates, F. L.: J. Exper. Med. **36**: 501 (Nov.) 1922.

The intratracheal inoculation of the secretions of five of the six patients induced in rabbits the usual clinical and pathologic condition, which consists, in brief, of a nonfatal and transitory leukopenia due to mononuclear depression, associated with a hemorrhagic edema and emphysema of the lungs and characteristic cellular exudate, but without pneumonic consolidation.[1] The nasopharyngeal secretions which failed to induce a reaction in the rabbit were obtained from a patient forty-eight hours after the onset of the first symptoms. In his blood, 7,400 leukocytes per cubic millimeter were found. Thus we were able to confirm, with the secretions from the recent cases of influenza, the results of animal transmissions obtained with nasopharyngeal washings derived from patients during the 1918-1919, the 1920 and the 1922 waves of the epidemic.

Cultivation tests were made with the filtered nasopharyngeal secretions and with the unfiltered suspensions of lung tissue from rabbits inoculated intratracheally with these patients' washings. Of the five persons whose secretions gave positive rabbit transmissions, there was found in the filtered nasopharyngeal washings of one a filter-passing, gram-negative micro-organism. From the lung tissue itself of a rabbit injected with the material of this patient was also cultivated a similar organism. In two other instances the patients' secretions did not yield this bacterium, but from the respective rabbits' lungs inoculated with the washings, growths of the same micro-organism were obtained.

These filter-passing bacteria, when compared with the strains of *Bacterium pneumosintes* isolated in 1918-1919, 1920 and 1922, were found identical in morphology and cultural characters, and the new strains were specifically agglutinated by immune rabbit serum prepared from the old ones. By the time, however, that the new cultures were purified and grown in sufficient quantity for animal inoculation, a process requiring from three to four months and from eight to twelve generations, tests for pathogenicity in the rabbit failed.

Thus in the 1923 wave of epidemic influenza there were isolated four strains of *Bacterium pneumosintes* from three of the six patients studied in the early hours of the disease. One culture was obtained directly from the filtered nasopharyngeal secretions and three cultures from the lungs of rabbits inoculated intratracheally with the secretions. All the strains agree morphologically, culturally and serologically with the cultures that were obtained in the previous waves of epidemic influenza.

SERUM AGGLUTININS IN PATIENTS WHO RECOVERED

The agglutination tests were carried out by the method already described.[4] The agglutinogens consisted of two pneumosintes strains; one, Strain 17, obtained from the 1918-1919 wave, and the other, Strain 34, from the 1922 wave of the influenza epidemic. Recent strains were not available when the tests were made.

Of the six patients whose nasopharyngeal secretions were studied and reported in this paper, the serums of four were examined for agglutinins. In one instance no agglutinins were found, even in dilutions of 1:2, seven days after recovery; but agglutinins were demonstrated in dilutions of from 1:2 to 1:10, thirteen days after the illness. In the second case, the agglutination test was positive in from 1:2 to 1:10 dilutions on the forty-seventh day after recovery, the only test performed. The two other serums were wholly negative.

Serums were available from six other recovered patients. We did not observe these cases personally, so that the nasopharyngeal secretions were not collected. However, the physicians in charge of the patients reported them as cases of typical, acute, uncomplicated epidemic influenza. In one patient the record of a blood count is missing; in the remaining five, the total blood counts given were, respectively, 3,200, 3,860, 4,200, 5,200 and 9,200.

Of these six cases, two were examined on the fifth and seventh days of convalescence. Both showed agglutinins in a dilution of serum of 1:2. A second examination, made on the twelfth and thirteenth days after the illness, revealed an increase of the titer in both to 1:8. The serums of the next two patients agglutinated the pneumosintes strains in dilutions of 1:10 on the ninth and tenth days, respectively, of convalescence. In these two instances no other tests were made. The remaining two patients were wholly negative.

To control the agglutinability of the cultures employed, Rabbits A and B, injected intravenously and repeatedly over long periods of time with living *Bacterium pneumosintes*, showed in their serums agglutinins against this micro-organism in dilutions of 1:10 in one case and 1:20 in the other.

To summarize the results of the agglutination tests, it may be said that of the serums from ten recovered patients, four were negative and six were positive. Of the positive cases, three were examined in the early and later stages of the convalescence and showed either slight or no agglutination against *Bacterium pneumosintes* in dilutions of 1:2 from five to seven days after recovery, but an appreciable reaction in dilutions of from 1:8 to 1:10, on the twelfth to the thirteenth day of convalescence. In one instance the agglutinins were demonstrable on the forty-seventh day after the influenzal attack.

The highest agglutinin titer in this series was 1:10. In this connection it is to be noted that in a previous publication[4] it was stated that *Bacterium pneumosintes* is a stable micro-organism which is not easily agglutinated.

SUMMARY

From the nasopharyngeal secretions of six patients in the early hours of typical, uncomplicated epidemic influenza during the epidemic of January and February, 1923, we observed in five instances an active agent, pathogenic for rabbits. On culture of the filtered secretions and of the lungs of rabbits inoculated intratracheally with these materials, four new strains of *Bacterium pneumosintes* have been isolated, one directly from the secretions and three from the rabbits' lungs. All the strains have been identified as agreeing with those of the 1918-1919, 1920 and 1922 strains in morphology, cultural properties and serologic reactions.

Agglutinins against *Bacterium pneumosintes* were demonstrated in six of ten patients who had recovered from an influenzal attack.

4. Olitsky, P. K., and Gates, F. L.: Experimental Studies of the Nasopharyngeal Secretions from Influenza Patients, XI, Antibodies in the Blood After Recovery from Epidemic Influenza, J. Exper. Med. 37: 393 (March) 1923.

EPIDEMIC TRANSIENT DIAPHRAGMATIC SPASM

A DISEASE OF UNKNOWN ETIOLOGY, EPIDEMIC IN VIRGINIA

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During the first week of July, 1923, Dr. Maude M. Kelly reported to the State Board of Health of Virginia that in Hanover County she had seen a number of persons who had recently suffered from an illness characterized by an acute onset with epigastric pain, but which did not give the usual history of summer digestive disturbances. July 21, she reported similar cases in Caroline County, and an investigation was ordered by the commissioner of health. The objects of this investigation were, first, to determine whether an epidemic was present; second, to learn the essential features of the disease and to present them to the physicians of the state as promptly as possible, and, third, to study the history of the epidemic and to obtain all available information about the characteristics of its spread. These studies are necessarily incomplete. The description of the cases will show that any investigation of this condition is seriously hampered by its short duration. The worst symptoms have often passed before the physician arrives, and before materials for laboratory studies can be assembled in isolated rural districts the patient has passed the acute stage.

CHARACTERISTIC CASE HISTORIES

CASE 1.—R. G., a white boy, aged 3, awakened his mother on the morning of July 15 by his peculiar actions. He appeared "so white that he was blue," and was breathing with extreme rapidity. The mother, in imitation of the respiration, took very short inspirations and uttered a marked expiratory grunt. The child was extremely hot and stuporous; but, on being roused, he complained of pain in the upper portion of the abdomen. His condition appeared so critical that death was momentarily expected. Two hours later he was much more comfortable, and by the time that a physician arrived, about six hours after the mother awakened, the condition was no longer acute. The physician found no physical signs to account for the distress, and obtained no history of any indiscretion in diet. The temperature at this time was about 102 F. The following day the patient appeared well. When seen, July 23, nothing abnormal was disclosed except that a differential count of the leukocytes showed: polymorphonuclears, 28 per cent.; lymphocytes, 60 per cent.; eosinophils, 10 per cent.; basophils, 2 per cent. Two sisters and one brother suffered similar attacks, beginning July 18, and a third sister, July 19.

CASE 2.—V. S. K., a white woman, aged 36, six months pregnant, on the evening of July 27, at about 10 o'clock, was working in the kitchen and was suddenly seized with severe epigastric pain. The attack was so violent that she fell to the floor and was unable to rise. She was carried to bed. She said that the pain choked her so that she was unable to breathe. She felt hot, and suffered from an excruciating headache. Her clothing was soon saturated with perspiration. Her husband gave her a saline purge, but a diarrhea began before this took effect. No physician could be obtained until the following morning. When seen, fourteen hours after the onset, the patient was feeling better. The temperature was 98.4; pulse, 78; respiration, 34. Physical examination showed a general tenderness of the abdomen and marked tenderness over the lower ribs. The differential leukocyte count showed: polymorphonuclears, 66 per cent.; lymphocytes, 33 per cent.; eosinophils, 1 per cent.

CASE 3.—J. S., a white youth, aged 17, on the afternoon of July 27 suddenly felt pain all over his body; it was particularly severe in the epigastrium and in the back at the level of the lower thoracic vertebrae. Breathing was rendered so difficult that he could scarcely talk. He did not know whether he had fever. He was constipated, and took medicine to relieve this condition. The next day he felt better, but did not try to work. During the day he was caught in a rainstorm and was wet through. The following day he felt weak and was "cold and hot," but did not suffer any pain. July 30, he went to work, but continued to feel "cold and hot," and at 11 o'clock he felt a return of the former pain and was forced to stop work. He was seen about thirty minutes later.

He was well developed and well nourished, and appeared to be acutely ill. His body was bent forward and his facial expression indicated that he was suffering severe pain. There was twitching of the muscles of the face and fingers. The vessels of the conjunctivae were moderately dilated. The face and neck were covered with perspiration. The tongue was moderately coated, and there was marked redness of the tonsils, peritonsillar region, and soft palate which may have been due to excessive smoking rather than to the acute illness. Respiration was of the thoracic type; the rate was 34 a minute. The movement of the two sides of the thorax was equal. The ninth and tenth right ribs were very tender on pressure throughout their length. Resonance and breath sounds were normal over the entire thorax. There were no râles. The heart was not displaced; it was normal in size; the rate was 94 a minute; the action was unusually strong, but the sounds were of good quality.

The abdomen was retracted, and showed little movement with respiration. The musculature was moderately tense, but there was no difference between the two sides. The tension relaxed on gentle palpation, and no localized tenderness was demonstrated except at the end of the ninth and tenth right ribs. Pressure at this point produced pain, which was most intense in the thorax along the course of these ribs.

The extremities were normal. There was no pain on passive or active motion of any of the larger joints. There was marked pain on any attempt to hold the body erect, and also during the act of reclining or rising from the bed. This pain was always localized along the course of the ninth and tenth right ribs.

At the time of this examination, the patient's temperature was 102.2. A differential leukocyte count showed: polymorphonuclears, 76 per cent.; lymphocytes, 23 per cent.; basophils, 1 per cent., and no eosinophils.

The patient was seen forty-eight hours later, when the temperature, pulse and respiration were normal. He felt no more pain even on deep breathing, and the tenderness along the ninth and tenth right ribs had disappeared. The white blood cells numbered 6,700; polymorphonuclears, 54 per cent.; lymphocytes, 40 per cent.; eosinophils, 5 per cent.; basophils, 1 per cent. No plasmodia or granular basophilia were demonstrated.

SUMMARY OF THE ACCOUNTS OF THE OTHER CASES STUDIED

Prodromal symptoms were usually absent. The patients frequently said that they were feeling unusually well immediately before the onset, but there were a few who complained of chilliness, headache and backache, or slight abdominal pain a few hours previous to the first paroxysm. The attack nearly always began suddenly and without warning, with severe epigastric pain. The pain later extended to one or both sides of the lower part of the thorax. The expressions most commonly used to describe the onset were: "It doubled me up," and "It caught my breath." Respiration was exceedingly difficult, and in some cases the rate was sixty a minute. In nearly all cases the tempera-

ture rose at the time of onset, and soon reached its maximum, which varied from 101 to 105. There were some cases in which the physician reported that the temperature was not elevated. The pain was intermittent, and was most severe at the time of onset or soon after. Succeeding paroxysms were less severe, and the respiratory difficulty was less marked. Profuse perspiration was the rule. Some patients describe the sensation of water dripping from the skin during the paroxysms or immediately afterward. The pain was increased with active movement of the body, particularly with any attempt to stand or sit erect. In some cases it was also increased by swallowing.

Nausea and vomiting were not prominent symptoms, but they occurred in about one third of the patients questioned. Constipation was the rule. In only one case examined did diarrhea begin soon after the onset. There were a few cases in which diarrhea began on the third day or later. There were also numerous cases in which dysentery followed the attack. Abdominal distention was mentioned in the complaints of the patients, but it was apparently subjective rather than objective.

More than half of the patients who were questioned complained of headache. Some had pain which they localized in the lumbar vertebrae. A few complained of pain in the extremities, particularly in the shoulders. One child complained of numbness and heaviness of the left arm during the early paroxysms.

After from four to ten hours of severe paroxysms of pain and dyspnea, the patient usually became more comfortable. In no case did the initial paroxysm last more than twenty-four hours without a period of comparative comfort. With the subsidence of pain, the temperature fell; but occasionally it rose again, and some patients complained of weakness and slight fever for from one to three weeks after the onset. In some cases there was no return of the pain and dyspnea, while in others the initial symptoms recurred with decreased severity after an interval of twenty-four hours or more. Frequently the recurrence was apparently initiated by exertion or exposure.

Not all patients present the physical signs in the same degree as in the cases that have been described. Some seem to have been more prostrated during the acute stage, while the illness of others was relatively mild. Some cases have been reported in which the severity of the pain and the abdominal rigidity were such as to suggest an acute condition requiring laparotomy. In one case an exploratory operation was performed but no pathologic condition was found.

Unfortunately, it was impossible to make complete blood counts in the rural cases which were seen; but differential counts were made in eleven cases. There was no evidence of any increase in the total number of leukocytes. The polymorphonuclears varied from 25 to 76 per cent. In eight cases they were between 60 and 70 per cent. of the total count. In six cases the percentage of eosinophils was greater than 5, and the maximum found was 13. The eosinophilia was probably not significant, for it has been noted with about the same frequency in other children from rural districts but with no history of similar illness.

The sequelae of this condition are variable, and appear to depend on individual and local conditions. One case was seen in which a streptococcus empyema followed the initial illness. In certain localities, dysentery followed six days or more after the onset. One physician reports twenty cases of otitis media occurring in eighteen families after attacks of this condition. The only death that has been reported was in a woman who developed an acute endocarditis after recovery from this illness.

A disease that was similar to this was epidemic in Virginia in 1888, and was described by W. C. Dabney,[1] who stressed its similarity to dengue but believed that it was a separate entity. This epidemic began in June, and it is noted that the region of Charlottesville and also Rappahannock County were affected; but Dabney does not mention the duration or the extent of the distribution of the epidemic. The condition was dubbed "devil's grip" by some of its victims. Dabney emphasizes the sudden onset, lancinating thoracic pain, the unusual heat of the skin, absence of respiratory symptoms other than quickened respiration, similar absence of gastro-intestinal disturbances, and the variable duration. In his cases the duration varied from twelve hours to three weeks. In the prolonged cases, the pain and the elevation of temperature recurred at the same hour each day. In our cases we have been unable to establish any such periodicity in the paroxysms in similar cases. Sixteen of Dabney's patients were students in the University of Virginia and were scattered in different parts of the university buildings, there being usually only one or two cases in a single neighborhood. The cases in the town, however, were among children, and no adults were attacked in the same houses. As a rule, it attacked all of the children in the family.

EPIDEMIOLOGY

The disease has been reported by thirty-eight physicians from twenty-two counties. Nearly all of the reports have come from the northeastern part of the state. There appear to have been relatively few cases west of Louisa County or south of Chesterfield County. In practically all areas the epidemic is reported to have begun in July, but there were cases in Northumberland and Lancaster counties in May, and in Hanover, Botetourt and Louisa counties in June.

Many of the reports call attention to the apparent spread of the infection through families by contact. This is supported in evidence collected by us. Among seventeen families we found five cases in one, four cases in one and three cases in two others. Some of these famiilies were visited within a day or two of the onset of the illness in the first victim, so there may have been subsequent cases about which we did not learn. In the family in which five cases developed, three persons were attacked on the third day after the onset of the first, while another was attacked on the fourth day. In one of the families with three cases, the second case occurred on the fifth day and the third case on the seventh day. One physician reports a family in which there were ten persons, and all were victims within a period of about two weeks.

Children are somewhat more frequently attacked than adults. This is more noticeable in those regions in which there are numerous cases than in those localities where there are only sporadic cases. Of the twenty-seven cases studied by us, fifteen patients were under 20 years of age, and eight were under 10. Of twelve cases investigated in the epidemic area in the southern part of Caroline County, eleven patients were under

1. Dabney, W. C.: An Account of an Epidemic Resembling Dengue, Which Occurred in and Around Charlottesville and the University of Virginia in June, 1888, Am. J. Med. Sc. **96**: 488-494, 1888.

20 years of age, six were under 10 years, and two were under 5 years.

The epidemic thus far appears to have confined itself to strictly rural communities. In Caroline County the only case found in Bowling Green was in a nurse who had been working in the epidemic area. Although there were many cases in King George County within a few miles of Fredericksburg, the only case found in the city was in a nurse in whom a positive diagnosis could not be made. Thus far, very few cases have been reported in the city of Richmond, in spite of its very close relation with epidemic areas in Hanover and Chesterfield counties.

DIFFERENTIAL DIAGNOSIS

Occurring in summer, this disease must be differentiated from the acute gastro-intestinal disturbances due to indiscretions in diet. The absence of vomiting and diarrhea in most of the cases, and the prominence of the respiratory difficulty make the differentiation simple. The same features also differentiate it from gastro-intestinal influenza. Furthermore, cases of influenza are more varied in type, while the earlier paroxysms in this condition are remarkably uniform. It is differentiated from epidemics of food poisoning by the lack of gastro-intestinal symptoms, by the absence of paralysis, and by the absence of any history of common food. The occurrence of the disease in all ages and over an entire state makes the probability of origin in food very remote. From dengue it is distinguished by the absence of the characteristic rise of temperature, absence of rash, absence of the "break-bone" pain, and by its occurrence in epidemic proportions in isolated rural districts, while only sporadic cases occur in the cities. It has already been indicated that it is most difficult to distinguish some of the early paroxysms from an acute abdominal condition requiring immediate surgical attention. In this condition there is usually no indication of shock; the pulse is full and relatively slow. The rigidity of the abdomen can usually be overcome, and the pain on palpation is referred to the lower part of the thorax. Exquisite tenderness of some of the lower ribs is likely to be present at points corresponding to attachments of the diaphragm. Pain referred to the lumbar vertebrae, shoulders and neck also constitute differential features. So far as is known at present, the leukocytes are not increased. It is differentiated from malaria by the fact that it occurs in nonmalarious regions as well as in those in which malaria is present. No malaria parasites have been found in the smears examined. The periodicity of recurrence is irregular.

COMMENT

We feel that this condition must be regarded as an infection; but the evidence is not sufficient to warrant any conclusion with regard to the causative organism, nor can we go further than conjecture in regard to its mode of transmission. The pathology of the condition is likewise obscure; but the epigastric pain, the difficulty in breathing, and tenderness along the lower ribs point to involvement of the diaphragm or of one of its serous surfaces. The severe symptoms with disproportionately short duration of the illness are not compatible with our usual conception of inflammatory conditions which may affect either the musculature or the serous surfaces of the diaphragm. The active virus seems to be remarkably selective in its action, and the lesions produced appear to be usually of a transitory character. In spite of the defects in our present knowledge, it is important that this condition be brought to the attention of the medical profession because, first, it must be differentiated from serious surgical conditions, and secondly, precautions must be taken to avoid serious sequelae.

SUMMARY

Beginning in June, 1888, and in May or June, 1923, there was epidemic in Virginia a disease characterized by acute onset with epigastric pain, difficulty in breathing, fever, tenderness along the lower ribs, and duration varying from one day to three weeks. In the epidemic of 1923 it has been most prevalent in the northeastern portion of the state, affecting rural areas more than urban, and children more than adults. It has caused no deaths, but in some cases it has led to serious sequelae. It is believed to be due to an infection, but the nature of the virus has not been determined.

INFLUENCE OF THE APPLICATION OF THE ICE-BAG TO THE PRECORDIUM

I. PRELIMINARY STUDY: THE NORMAL PERSON*

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AND
CLEVELAND J. WHITE, M.D.
MADISON, WIS.

Da Silva,[1] working under the direction of Bozzolo, made the first special study of the influence of the application of the ice-bag to the precordial region. He concluded that in the normal individual the systolic arterial blood pressure would rise from 30 to 40 mm. of mercury after an hour's application of the ice-bag, and that this rise in pressure was explained by an increase in vascular and cardiac tone. Corresponding to the increase of arterial pressure, the cardiac rate fell an average of 8 beats a minute. Intracardiac thermic determinations on dogs showed a decrease in temperature of 1 to 5 degrees C. Da Silva concluded that these effects resulted from the direct action on the cardiac fibers.

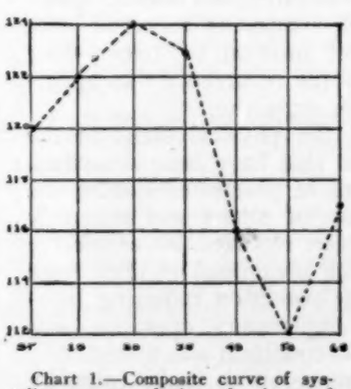

Chart 1.—Composite curve of systolic pressure during the hour of ice-bag application.

Winternitz[2] made practically the same observations as da Silva, but included a somewhat more exhaustive study of the therapeutic indications of such hydrotherapy. Hirschfelder[3] has briefly summarized their work.

In the present study, the work has been directed toward the immediate effects of the application of cold over the heart of normal subjects with the rationale of the treatment in view. In our preliminary observations, the studies have been confined to a series of twenty-five normal persons, with blood pressure, pulse and tem-

* From the Bradley Memorial Hospital, Department of Clinical Medicine, University of Wisconsin.

1. Da Silva: Riforma med., 1886, p. 253.
2. Winternitz: Blätter f. klin. Hydrotherapie, 1891, No. 6.
3. Hirschfelder: Diseases of the Heart and Aorta, p. 221.

perature readings at ten minute intervals throughout the hour's application of the ice-bag. Particular attention will be paid the effect on the blood pressure and on the heart rate. Temperature readings by mouth showed no appreciable change at any time, although da Silva reports a fall in rectal and oral temperatures of an average of 0.75 degree.

Our observations on blood pressure readings in this series of normal subjects were inconclusive. The systolic arterial blood pressure rose in five cases, was unchanged in seven, and fell in thirteen. In the last group the greatest fall was 18, and the average 3.5 mm. Diastolic pressure followed, mainly, the systolic change, and no appreciable variation in pulse pressure was seen. In most instances the arterial blood pressure showed a preliminary rise with a subsequent decline and a short terminal increase (Chart 1).

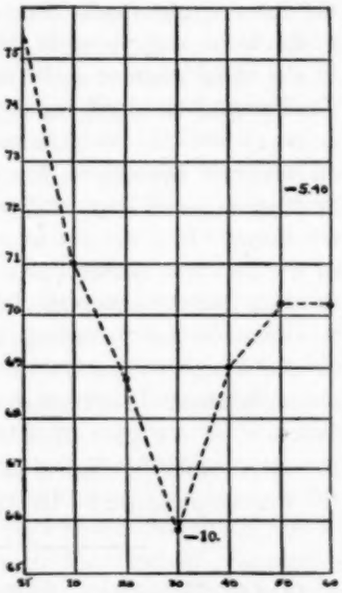

Chart 2.—Typical curve, showing a maximum drop at thirty minutes.

The pulse rate showed a final increase in three cases, no change in three, and moderate decrease in the remaining nineteen. The average fall in twenty-five was 4.28, and the average in twenty-two (excluding the three subjects with accelerated rate), 5.40. The maximum pulse decrease in a single case was 26 beats. However, in all but four cases the greatest decrease in pulse rate, i. e., the maximum effect, was prior to the sixty minute reading, averaging a significant maximum fall of 10 beats in the heart rate at the end of thirty minutes (Chart 2). This apparently bears out the empiric practice of shorter periods for ice-bag applications. The greatest effectiveness might be achieved in alternating half-hour periods.

Further study is being pursued to determine the effect of the application of cold to the precordium on the accelerated heart rate in febrile cases and in cases in which there is tachycardia of immediate circulatory origin. In addition, an experimental study is contemplated, directed toward a determination of the factors involved in slowing the heart rate.

Sputum Infection of Children.—Roughly, about 10 per cent. of children of the type who resort to city dispensaries exhibit infection by the end of their second year; at 3 years, from 15 to 20 per cent.; by 6 years, from 50 to 60 per cent., and by 15, about 75 per cent. In other words, if we take 75 per cent., or three fourths, of all children as our standard of infection at age 15, we find that during the first two years of life, 10 per cent. of all children, or about one-seventh of the infected, receive their first infection; during the third year, about one-seventh more; between 4 and 7, one-half more; and between 7 and 15, one-sixth or one-seventh more. The significant feature of such an analysis is that during infancy about two-sevenths of the infected receive tubercle bacilli for the first time; during early childhood (from four to seven years) about one-half; and during later childhood (from seven to fifteen) about one-seventh.—A. K. Krause: Rest and Other Things, p. 31.

Clinical Notes, Suggestions, and New Instruments

A CASE OF MYOSITIS OSSIFICANS

B. J. GALLAGHER, M.D., WASECA MINN.

Lewis[1] recently reported two cases of myositis ossificans in which bone developed in incisions of the abdominal wall, and he referred to eleven cases from the literature in which the same condition was found. The operation preceding the laying down of bone in the abdominal wound in eight of the thirteen cases reported was for gastro-enterostomy. On account of the apparent rarity of the condition, I am reporting a case in which the condition occurred subsequent to gastro-enterostomy.

A man, aged 38, suffered for several years with spells of indigestion of a gastric ulcer type. In April, 1921, he was operated on elsewhere; a duodenal ulcer was found, and a posterior gastro-enterostomy was performed. The wound suppurated, and several weeks elapsed before it was completely healed. In April, 1923, he consulted me on account of a ventral hernia large enough to admit the thumb, at about the center of the old right rectus incision. On each side of the old scar for the distance of about one-half inch and running around the upper end of it like a hair-pin was a very hard, flat mass, which felt about like a wooden tongue depressor. In April, 1923, I operated on him for repair of the ventral hernia. The operation necessitated the removal of this hard substance, extending the entire length of the wound, about the width and thickness of a rib, which proved to be bone.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY.

ARSPHENAMINE-SQUIBB (See New and Nonofficial Remedies, 1923, p. 49).

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Ampules Pituitary Solution-Squibb, 0.5 Cc.
Ampules Pituitary Solution-Squibb, 1 Cc.

NEUTRAL ACRIFLAVINE-"NATIONAL" (See New and Nonofficial Remedies, 1923, p. 25).

The following dosage forms have been accepted:

Enteric Coated Tablets Neutral Acriflavine-"National," 0.0324 Gm. (½ *grain*).

Ointment Neutral Acriflavine-"National," 1 per cent. Neutral Acriflavine-"National" 1 part, dissolved in glycerin, 8 parts, and incorporated with a base composed of hydrous wool fat and petrolatum to make 100 parts.

POLLEN PROTEIN ALLERGENS-SQUIBB (See New and Nonofficial Remedies, 1923, p. 241.

The following products have been accepted:

Apple Pollen Allergen-Squibb; Black Walnut Pollen Allergen-Squibb; Cherry Pollen Allergen-Squibb; Dandelion Pollen Allergen-Squibb.

Prepared by the method given for Corn Pollen Allergen-Squibb (New and Nonofficial Remedies, 1923, page 241).

GROUP ALLERGENS DIAGNOSTIC-SQUIBB (See THE JOURNAL, Aug. 4, 1923, p. 393).

The following products have been accepted:

Group Allergens-Squibb Type XXIII (Ash, Cherry, Maple, Oak, Poplar, Willow).

1. Lewis, Dean: Myositis Ossificans, J. A. M. A. **80**: 1281 (May 5) 1923.

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SATURDAY, SEPTEMBER 1, 1923

THE LIVER AND CARBOHYDRATE METABOLISM

The discovery of insulin, and the widespread interest in the phenomena with which it may be concerned have centered interest to an unusual degree on the rôle of the pancreas in carbohydrate metabolism. Before the publication of the researches of the Toronto group of investigators responsible for the recent helpful progress in this field of study, the outstanding symptom that attracted the attention of the clinician dealing with abnormal metabolism of sugars was the hyperglycemia commonly present. Now that it has become possible to combat the undue content of glucose in the blood by administration of insulin with results more dramatic in character than even the most extreme dietary prescriptions can bring about, the therapeutist has been brought face to face with the possibilities of overdosage. The "utilization" of the circulating carbohydrate may proceed so rapidly and effectively under insulin administration that the blood sugar content is rapidly brought below the normal level of approximately 0.1 per cent. Hypoglycemia thus ensues, attended by a train of consequences that may be quite as threatening as the condition originally to be combated. The early symptoms of such overdosage may in turn be made to disappear quickly, and further danger may be avoided by an intake of carbohydrate in some easily available form. For this reason the employment of insulin calls for foresight based on understanding of the potency of the product and the tolerance of the patient.

It has thus come about that the clinician of today is liable to encounter the consequences not only of hyperglycemia, which has long offered a difficult problem in therapy, but also of an occasional menacing hypoglycemia. In either event the sugar supply of the circulation is involved. It has become clear, particularly through the difficult experiments of Mann [1] and his collaborators at the Mayo Foundation, that the liver plays a highly important part in keeping up the supply of blood sugar. In the absence of this organ a hypoglycemia incompatible with the continuance of life promptly arises, and the threatening symptoms can be relieved for a time by introduction of glucose into the system. Accordingly the liver, responsible for the maintenance of the normal level of blood sugar, assumes renewed importance and undoubtedly has a "vital function" in relation to carbohydrate metabolism.

Recently Mann and Magath have demonstrated that the liver is absolutely necessary for the maintenance of the blood sugar level in the hyperglycemic individual in the same manner as in the normal. For example, the increase in blood sugar following pancreatectomy is dependent on the presence of the liver. Without an adequate amount of functioning hepatic tissue, the increase in blood sugar following pancreatectomy could not occur. It is not yet understood precisely why loss of the pancreas should cause the rise in sugar, beyond the fact that the pancreatic hormone for sugar destruction is no longer furnished; in any event, the presence of the liver is necessary for the production of the hyperglycemia. Fortunately, the danger of underfunction on the part of the liver is relatively slight, for only a small portion of the entire organ is sufficient for the maintenance of its essential activities.

1. Mann, F. C., and Magath, T. B.: Studies on the Physiology of the Liver, II, Arch. Int. Med. **30**: 73-84 (July) 1922; III, ibid., **30**: 171-181 (Aug.) 1922; IV, ibid. **31**: 797-806 (June) 1923.

CONSTITUTIONAL RESISTANCE AND SUSCEPTIBILITY TO DISEASE

Every clinician who has come face to face with the varied manifestations of disease must have been impressed from time to time with the markedly unlike degrees of resistance and susceptibility shown by different patients. To some extent, such variability may be attributable to the varying virulence of the infective agent, if such an etiologic factor is involved, or to differences in the primary damage inflicted on the organism. Yet even when these extraneous influences are taken into account, persons may still exhibit pronounced differences in their ability to meet the disease foes. Owing to the lack of a more precise definition, it has become customary to speak of constitutional differences, thereby implying some systemic weakness or strength in the attack on disease.

It would, indeed, mark a distinct step in advance in the understanding of both the theory and the practice of medicine if a scientific explanation of varying physiologic stamina were forthcoming. Something of this sort seems to follow from recent investigations of Brown and Pearce [1] at the Rockefeller Institute for Medical Research in New York on the interrelations of certain diseases and the endocrine systems in those

1. Brown, W. H., and Pearce, Louise: The Reaction of the Endocrine System of the Rabbit to Tumor Inoculation, and the Relation of this Reaction to Malignancy, Proc. Soc. Exper. Biol. & Med. **20**: 472 (May) 1923; Animal Resistance and the Endocrine System of the Rabbit in Experimental Syphilis, ibid. **20**: 476 (May) 1923.

affected. It seems beyond much doubt that the growth of certain tumors is associated with the occurrence of marked alterations in the size and the general appearance of such organs as the thyroid, the thymus and the suprarenals, while distinct histologic changes also are found in the thyroid, the thymus and the hypophysis. For example, when the tumor progressed for a considerable period of time with the formation of metastases, some of the organs increased markedly in weight. If the disease assumed a highly malignant character, as indicated by the early appearance of widespread metastases, many of the endocrine organs showed a marked reduction in weight, suggesting an exhaustion; and this occurred before the experimental animal exhibited any clinical signs of physical deterioration. Again, when recovery ensued, and particularly when immunity was developed, the weights of the thyroid, parathyroids, thymus, suprarenals and hypophysis were all found to be greater than normal, and they apparently retained their increased size indefinitely.

Brown and Pearce point to such alterations, which were not chance observations but rather the outcome of many laborious experiments, as showing clearly that there is an intimate relation between the reactions that occurred in the typical endocrine organs and the malignancy displayed by the tumor or the ability of the animal to control or suppress its growth. Some of the organs mentioned are notably concerned with the regulation of growth and maturity in the organism; apparently their activity may determine the resistance of the individual to the development of neoplasms. From this standpoint, malignancy may to some extent depend on the animal economy, not merely on the invading cells. Something comparable has been observed in the extensive studies of experimental syphilis at the Rockefeller Institute. The status of the endocrine organs at one stage of the infection differed from that at another; and, in general, the direction and magnitude of the change that occurred was proportional to and parallel with the resistance displayed by those affected. Furthermore, it was found that the alterations that took place as the disease was brought under control and immunity was established were of a more or less permanent character. In other words, such organs as the thyroids, parathyroids, suprarenals and thymus did not revert to their normal size and appearance, but maintained a condition suggestive, as the New York investigators express it, of a higher plane of functional activity and of a change in the general relationship of one organ to another.

It is not easy to refrain from the speculations which these important studies evoke. They suggest at once the significant possibility of altering the general course of various diseases by modifying the reactions of the endocrine systems. If, as seems to be demonstrated, the development and resolution of syphilitic lesions are subject to the same influences as are concerned in ordinary processes of growth and maturity, it becomes easier to understand how agents which are devoid of spirocheticidal potency may nevertheless profoundly affect the endocrine glands and the lymphoid tissues, and thus modify the progress of the disease. Perhaps the therapeutic value of iodids and mercury in syphilis lies in this reaction.

It has been remarked that in syphilis the spirochete is of minor importance, as compared with a number of other influences, such as the factor of resistance in the host. Therapy directed toward the latter end comes into new prominence in the light of what has been discussed. Treatment must have due regard to the maintenance of constitutional resistance as well as to the eradication of the infective agent. Brown and Pearce point out further that, in view of the changes recorded in important organ systems of the body, differerences in individual susceptibility, differences between the sexes, and between pregnant and nonpregnant women, or even racial and geographic peculiarities of a disease such as syphilis may depend on the constitutional factors described. Features of the disease, such as abnormalities in dentition in congenital syphilis, may be referable to injury inflicted on certain endocrine glands. The state of heightened activity of the latter or their constant stress may in turn account for the eventual physical deterioration and predisposition to other forms of disease which so often occur in syphilitic persons. The subject is by no means a new one, nor is the formulation of the problem entirely novel; but it does represent a step toward progress to be able to point to certain definite structures by the varying functional condition of which the character of specific diseases is distinctly modified. The fact that the structures involved in the present information are some of the ductless glands which have been the subject of all too much futile speculation and pseudoscience need not discourage a further study based on real facts secured under careful laboratory control.

ANTIRACHITIC SUBSTANCES

Cod liver oil is preeminently a specific in the treatment of rickets; and recently the therapeutic value of egg yolk in this disease has been emphasized by Hess.[1] The curative value of egg yolk is said to be less than that of potent cod liver oil, but it is likely to prove useful in cases in which the latter may not be well borne. Both of these fat-containing foods are rich in vitamin A, a food factor essential to well-being and apparently capable of protecting some species, at least, from the occurrence of certain types of ophthalmia. In view of these parallelisms between the antirachitic and the antiophthalmic potencies of cod liver oil and egg yolk, the conclusion has been drawn that they are manifestations of the same vitamin. Certain well known facts seem, however, to be opposed to such a conclusion. It

1. Hess, A. F.: The Therapeutic Value of Egg Yolk in Rickets, J. A. M. A. **81**:15 (July 7) 1923.

is generally admitted by pediatricians who have devoted attention to the subject that rickets may occur quite freely in infants on mother's milk or on the best grades of fresh cow's milk. Furthermore, rachitic infants are not cured by liberal inclusion of cream or butter in their diets. Animal experiments also have strengthened the conclusion that the milk fats are not carriers of antirachitic properties in any noteworthy degree.

The evidence that the antirachitic potency of certain foods is not to be confused with vitamin A seems to be increasing. McClendon and Schuck,[2] for example, have demonstrated that dried spinach, which exhibits the characteristic antiophthalmic potency attributed to vitamin A in both milk fat and cod liver oil, seems to be devoid of antirachitic efficiency. Employing the technic by which they have concentrated the antirachitic substance in cod liver oil several hundred times, Zucker and Barnett [3] have failed to separate it from a variety of food materials, including butter, carrots, spinach and pig's liver—all sources of vitamin A. For the present, therefore, it seems best to look on the antirachitic substance as something distinct, or at any rate to preserve an open mind in this connection.

Coincident with these studies of the antirachitic substances, and likewise the influence of the environmental factors represented by light in the cure of rickets, has come an interest in the hereditary and other predisposing aspects of the disease. There is considerable evidence that protective antirachitic substances can be stored in the body very early in life, and that it may be difficult to furnish the young with a sufficient amount of protection through the mother's milk.[4] In animal experiments, the influence of typical rickets-producing diets sometimes fails to become manifest until the second generation. Byfield and Daniels [5] have reported that the young of properly nourished mothers are less susceptible to rickets, even though they are themselves badly fed. If a deficiency in the diet of the parent may thus profoundly affect the development of the offspring, so that faulty parental nutrition may become one of the chief causes of rickets, we may well agree with these observers that prophylaxis at once looms up as an important factor in this dystrophy. Byfield and Daniels insist that it requires only the most cursory analysis of the average modern diet to note that inorganic and other deficiencies are common today; hence it need not be surprising that rickets of mild degree is a manifestation so frequent as to escape attention or, at least, arouse very little comment from the casual observer. Some one has aptly remarked that we seem to be transferring the problem of rickets from the pediatrician to the obstetrician. In these days, many aspects of medicine point to the importance of greater attention to the diet and hygiene of the mother during pregnancy.

2. McClendon, J. F., and Schuck, C.: The Presence of Antiophthalmic Vitamin and the Absence of Antirachitic Vitamin in Dried Spinach, Proc. Soc. Exper. Biol. & Med. **20**: 288 (Feb.) 1923.

3. Zucker, T. F., and Barnett, M.: Observations on the Distribution of Antirachitic Substances, Proc. Soc. Exper. Biol. & Med. **20**: 375 (April) 1923.

4. Hess, A. F.; Weinstock, M., and Tolstoi, E.: The Influence of Nutrition During the Preexperimental Period on the Development of Rickets in Rats, Proc. Soc. Exper. Biol. & Med. **20**: 371 (April) 1923.

5. Byfield, A. H., and Daniels, A. L.: The Rôle of Parental Nutrition in the Causation of Rickets, J. A. M. A. **81**: 360 (Aug. 4) 1923.

Current Comment

SMOKING AND BLOOD PRESSURE

Among the habits that almost invariably are interdicted by the physician in the treatment of illness is the smoking of tobacco. Heretofore this interdiction has been based on a large empiric observation, but not founded on any extensive scientific study. In the course of a series of investigations on the effects of cigar and cigaret smoking on certain psychologic and physiologic functions, Dr. Robert L. Bates [1] of the Psychological Laboratory of the Johns Hopkins University has made a number of observations on the effects of tobacco smoking on the systolic and diastolic blood pressure and on the heart rate. Readings were made over a long interval on volunteer students, who were seated comfortably and smoked extensively during the observations. The tests indicated briefly that, following the smoking of a cigar or three cigarets, there is a rise in systolic and diastolic blood pressure and in the heart rate. The rise in blood pressure usually amounts to only a few millimeters, and, as Dr. Bates remarks, "The normal irregular variations in blood pressure, due to various causes, are practically as great as the variations which may be ascribed to tobacco." The rise in heart rate is irregular: usually less than 10 a minute in most cases, but in some cases as much as 20. Both blood pressure and heart rate subside to normal in from twenty to thirty minutes. The report of this study concludes with the statement that the extent to which the effects are due to absorbing smoke products and to psychologic factors involved in smoking remains to be discovered. The observations are of interest and indicate particularly the great difficulty in arriving at scientific conclusions in investigations of this character.

THE ADMINISTRATION OF INSULIN

The present methods of administering insulin parenterally, and particularly by the device of frequent subcutaneous injections, are far from satisfactory, even when the technic is carefully carried out so that there is a minimum of irritation at the site of the introduction of the drug. The difficulties are aggravated by the fact that the effects of insulin are transitory, so that the supply to the organism must be renewed at frequent intervals. Depending on the severity of the patient's diabetic symptoms, injections must be repeated twice or thrice daily for periods of as yet undetermined lengths. Consequently, even the earliest investigators of insulin and other pancreatic preparations attempted to secure physiologic effects by oral administration of the products. Banting and Best believed that slight

1. Bates, R. L.: The Effects of Cigar and Cigarette Smoking on Certain Psychological Functions, J. Comp. Psych. **2**: 431 (Dec.) 1922.

results could sometimes be obtained when insulin was introduced into diabetic dogs through the stomach tube, although the outcome was never comparable to the beneficial effects of subcutaneous or intravenous injections. Rectal administration and nasal insufflation, both procedures which have proved to be effective with many drugs, were tried without success. Recently Hachen and Mills [1] of the University of Cincinnati have reported evidence of fairly rapid absorption of insulin from the small intestine in dogs and rabbits when the hormone was introduced directly into the bowel. To produce the desired effect by intestinal administration, very large doses are required. In man, on the other hand, the blood sugar lowering effect of insulin was not noted after good sized doses administered either orally or through a duodenal tube by the intestinal route. Earlier observers at Rochester, N. Y.,[2] had reported a reduction in hyperglycemia and glycosuria after the administration of Murlin's pancreatic extracts directly into the duodenum of patients through an Einhorn tube. The more recent reports [3] from the same laboratory show that desiccated pancreatic extracts, taken in capsule form by stomach, have thus far not proved to be effective in decreasing blood sugar or urinary sugar. It is desirable to give wide publicity to the current limitations of a most promising therapy, since unscrupulous venders of drugs are already attempting to distribute just-as-good pancreatic and antidiabetic preparations that are recommended for oral use.

COMMUNITY ORGANIZATION AGAINST TUBERCULOSIS

Tuberculosis is no longer a merely personal matter, but, like other infectious diseases, is a problem of vital importance to the community. The full benefits of a campaign against it can be secured only by efficient organization and cooperation. The report [4] of the comprehensive activities of the city of Richmond, Va., describes an unusually interesting plan. The city requires notification of all cases of tuberculosis, and a Virginia statute provides a penalty for tuberculous persons who place others in danger of infection. The antituberculosis work is placed under a special division of the city health bureau, which is in charge of a full-time physician, with the assistance of eight nurses, two of them on full time and the others on part time. The city maintains a tuberculosis clinic and a nutrition clinic which work in cooperation with the city hospital and laboratories for operative, roentgenologic and bacteriologic assistance. Sanatoriums are provided both for white and for colored patients, and use is also made of the state sanatoriums, when necessary. The clinic is principally a center for diagnosis and instruction, treatment being carried on in the homes under the direction of the patient's own physician or, when necessary, in the sanatoriums. Visits are made by the nurses to the homes, and there are special provisions for the study of contacts and the supervision of arrested cases. Great emphasis is laid on the instruction of patients and their friends through personal talks at the clinics and by the visiting nurses; literature, sputum cups and paper napkins are provided when necessary, with instructions for their use. In addition, the division is concerned with inspection of the city milk supply, all of which is either pasteurized or obtained from tuberculin-tested cows. The clinic director also visits, at the request of the physician in charge, the homes of patients who are unable to go to the clinic for the purpose of consultation. Finally, provision is made for the investigation, in every case, of the social and financial condition of the patient, partly to eliminate nonresidents and partly to see that those able to pay for services do not become charges on the city.

1. Hachen, D. S., and Mills, C. A.: Effects Following the Intestinal Administration of Insulin, Am. J. Physiol. **65**: 395 (July) 1923.
2. Sutter, C. C.; Gibbs, C. B. F., and Murlin, J. R.: Am. J. Physiol. **63**: 392, 1923.
3. Gibbs, C. B. F., and Sutter, C. C.: Clinical Observations on the Use of the Antidiabetic Substance, Proc. Soc. Exper. Biol. & Med. **20**: 419 (April 14) 1923.
4. Mercer, W. N.: The Activities of the Tuberculosis Division of the Health Bureau, Department of Public Welfare, Richmond, Va., Virginia M. Month. **50**: 243 (July) 1923.

RECENT DATA ON THE SCHICK TEST

Readers of THE JOURNAL are familiar with the efforts that have been made during the last two years or more by Park, Zingher and their associates to secure a higher degree of immunization of children in New York against the dangers of diphtheria. It is perhaps unnecessary to recall that this is the foremost fatal disease in children from 3 to 5 years of age, and is preceded only by diarrhea and pneumonia in the mortality tables of children from 1 to 3 years of age. Statistics collected on an elaborate scale with adequate care always command respectful attention. This ought, therefore, to apply to the records secured for more than 150,000 children of school age in the public schools of Manhattan and the Bronx. More than 60 per cent. of these young persons gave a positive Schick reaction on entering school. Even a higher percentage of reactors has been observed in certain rural towns. Such facts present to the health authorities and physicians of this country, in a forceful way, the problem of securing immunity. At any rate, science has provided methods of protecting the young against the ravages of diphtheria so that the responsibility must be squarely faced by those most concerned, particularly the parents. Zingher [1] has not hesitated to assert that active immunization against diphtheria should become as much of a routine for all children between 6 months and 6 years of age as vaccination is against smallpox today. There is added food for reflection in the observation that a higher percentage of positive Schick reactions, that is, a smaller incidence of "natural" immunity, occurs among the children of the more well-to-do. Crowding, a characteristic of living among poorer classes in cities, brings exposure to infection and tends to develop immunity. In smaller communities, and especially in rural sections, where people live more or less segregated, the percentage of positive Schick reactions may be very high. Zingher has seen from 85 to 90 per cent. of positive results in certain

1. Zingher, Abraham: The Schick Test Performed on More Than One Hundred and Fifty Thousand Children in Public and Parochial Schools in New York (Manhattan and the Bronx), Am. J. Dis. Child. **25**: 392 (May) 1923.

rural schools. The rôle of race and heredity, though noticeable, is not very important in a problem of such magnitude. Physicians in every community may therefore well ask themselves: What are we doing against diphtheria here?

"THROW AWAY YOUR GLASSES"

In the September number of *Hearst's International* appears a contribution entitled "Throw Away Your Glasses," by one W. H. Bates, M.D. The article is an unfortunate hoax for thousands, even tens of thousands, of persons who will be cruelly deluded by its irrational bunkum. It presents a half-baked theory, based on the crudest of experimental work, elaborated in a pseudoscientific manner and presumably broadcast by the magazine because of its sensational title. Half or less than half truths are announced as facts without any investigation of underlying anatomic and physiologic conditions, and with no careful experimental study. The whole presentation is supported by illustrations which, like the cartoons of Goldberg, "don't mean anything." Certainly the case reports are too questionable to stand analysis. The entire matter illustrates again the danger of unauthoritative instruction of the public in medical matters. One article of this character may undo the good work of years by committees and councils for the conservation of eyesight; it will lead into false paths many of the afflicted who were perhaps progressing slowly but surely on the road to recovery. An editor's note indicates that the article is sponsored by Mr. Norman Hapgood himself. Where did Mr. Hapgood acquire his knowledge of the science of ophthalmology?

THE POTASSIUM IN THE BLOOD

Only a few years have elapsed since the clinician's knowledge of the composition of the blood and its changes incident to disease was limited to the blood pigment, hemoglobin, with an occasional estimation of the specific gravity as an index of the concentration in total dissolved solids. Today blood chemistry has attained the importance of practical usefulness as well as scientific interest. Procedures easily carried out by those suitably trained afford data that play a helpful part in the diagnosis and prognosis of disease and in the evaluation of therapeutic measures. The inorganic components of the blood have been among the most recent additions to the pursuits of clinical chemistry. As a consequence, the estimations of calcium and phosphorus have been put on a stable basis, and the data already secured have promoted scientific medicine in connection with several diseases. The element potassium has been the subject of some difference of opinion. It appears from the studies of Wilkins and Kramer [1] at Johns Hopkins University that a source of analytic error in the estimation of potassium in blood serum may lie in the red corpuscles, which contain a relatively enormous store of this alkali, and tend slowly to give it up to the serum when shed blood stands. Diffusion from the erythrocytes may, in fact, become very rapid. When precautions are taken, however, to secure speedy analysis, the potassium content of normal human serum is found to be fairly constant, approximating 20 mg. per hundred cubic centimeters. Thus far only two noteworthy deviations have been detected in disease, namely, an increment to 25 or 26 mg. in some cases of nephritis, and to from 23 to 29 mg. in tetany. According to Wilkins and Kramer there is no definite relationship between this and the decrease noted in blood calcium. These reports, taken in connection with the failure of other recent investigators to find any significant increase in the potassium content of the serum, even in advanced nephritis, make it unlikely, for the present at least, that this element will require special consideration in the current micro-analytic routine chemical examinations of the blood.

1. Wilkins, Lawson; and Kramer, Benjamin: Studies on the Potassium Content of Human Serum, Arch. Int. Med. 31:916 (June) 1923.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Public Health News.—A substation for biologic products, where the Pasteur treatment for rabies, tetanus antitoxin, typhoid vaccine and other prophylactic materials may be obtained, will be established in Birmingham in the near future, according to the director of the Birmingham branch laboratory of the state board of health.——Dr. H. G. Perry, vital statistician for the board of health, called a conference in Montgomery, August 8, to urge physicians and registrars to keep full and accurate reports on births and causes of deaths.

CALIFORNIA

State Medical Meeting.—At the annual meeting of the Medical Society of the State of California at San Francisco, June 21-23, Dr. Granville MacGowan, Los Angeles, was elected president; Drs. William H. Strietmann, Oakland, and Ruggles A. Cushman, Santa Ana, vice presidents, and Dr. Emma W. Pope, San Francisco, secretary. The name of the society was changed to the California Medical Association. Dr. William E. Musgrave, formerly secretary of the association, remains as editor of the *California State Journal of Medicine.*

Physician Erects War Memorial.—A large stone and steel memorial to the men who were killed in the World War has been erected in Oakland by Dr. Leroy E. Herrick of that city. Nearly 85,000 American names have already been placed in the crypt, and the Canadian, Australian, English, Belgian, New Zealanders', French and other allies' names will be added in the near future. The monument has portraits of Washington, Lincoln, Roosevelt and Wilson carved in the stone, and the whole is surmounted by an American Eagle. The entire cost of maintenance will also be paid by Dr. Herrick.

Hospital News.—Three and one-half acres have been cleared in the preparation of a site for the new sanatorium at Paradise.——The residence of Charles Myers and 20 acres of land at Arbuckle have been sold to Drs. Earl Harlan and Herbert S. Powis, who will remodel the building into a sanatorium.——Two lots have been purchased by J. P. Johnson as a site for a sanatorium at Fullerton.——A twelve-room addition will be made to the hospital owned by Dr. Hugh E. Smith, at Newman.——San Fernando was chosen, August 15, as the site for the U. S. Veterans' Bureau Tuberculosis Hospital, which was allotted to southern California. This location was recommended to the board of hospitalization by Director Hines. The San Fernando institution, and that at Livermore, each will have 300 beds for tuberculous patients. The institution at San Fernando will represent an expenditure of about $2,000,000. The plans call for the cottage type of construction. Two sites are under consideration, one known

as the Brown site, comprising 200 acres, and the other the Volney Craig ranch of 600 acres.——Although protested by 320 residents of the neighborhood, the health committee of the board of supervisors, August 23, recommended that a permit be granted the Chinese Association to erect a hospital and dispensary at Jackson and Trenton streets, San Francisco.

CONNECTICUT

Welfare Work for Backward Children.—The 3,500 backward and subnormal children of Connecticut are being provided for by the state, more than forty classes having been formed in Bridgeport, Hartford, Manchester, New Haven, Somerville, Stamford, Torrington and Waterbury. More than 600 children have been placed in these schools with an average of fifteen to each class. Some schools provide two types of classes—one for children who are definitely feebleminded and one for those who are merely backward.

DISTRICT OF COLUMBIA

Appropriation for Howard University.—An appropriation of $500,000 to construct and equip an addition to the medical and dental schools of Howard University, Washington, will be asked of congress at its next session by Secretary of Interior Work. Dr. Work states that this sum is necessary owing to insufficient educational facilities for the colored race in the medical and dental professions throughout the United States. The average number of physicians graduating each year at Howard University Medical School for the last ten years has been twenty. During the 1922 fall term, there were 165 applicants for admission, but only fifty could be admitted because of inadequate laboratory space. The medical school is conducted in a small building. The proposed appropriation will be used to build a large structure that will about double the student capacity. Through a $500,000 endowment raised by public subscription and a gift from the General Education Board (THE JOURNAL, July 28, p. 304) sufficient funds were secured to provide for additional instructors for the medical school during the next five years.

HAWAII

Medical Society of Hawaii.—At the recent annual meeting of the society at Honolulu, Dr. Forrest J. Pinkerton, Honolulu, was elected president to succeed Dr. Joseph E. Strode. Dr. Wah Kai Chang remains as secretary of the association. The next annual meeting will be at Honolulu in April, 1924. Dr. G. McD. Van Poole was elected treasurer.

ILLINOIS

Hospital News.—A representative group of Aurora business and professional men have assumed charge of a campaign to raise $100,000 for a building fund for St. Charles City Hospital. It is to be used for a complete maternity hospital.——The Illinois Soldiers' and Sailors' Home and Hospital, Quincy, has been opened to World War veterans and their wives.——Excavation work has been started for the $125,000 nurses' home for the Washington Boulevard Hospital, Chicago.——The Tri-City Sanatorium, Moline, of which Dr. Elmer F. Otis is superintendent, has been closed.

Personal.—Dr. Harry C. Campbell has been appointed city physician of Alton.——Dr. Isaac D. Rawlings, the state commissioner of health, has appointed the following physicians as district health superintendents: Christian H. Diehl, Effingham; A. J. Markley, Belvidere; Paul A. Slater, Hindsboro; Robert C. Bradley, Peoria; Charles S. Nelson, Springfield, and Henry Reis, Jr., Belleville.——Dr. Jacob M. Furstman, director of health and hygiene for the Peoria public schools, has resigned to accept the position of assistant health director of the public schools of Los Angeles.

Chicago

Society News.—The first autumn meeting of the Chicago Tuberculosis Society will be held, October 11.——A special meeting of the council of the Chicago Medical Society was held, August 17, to discuss the venereal disease problem of Chicago. Drs. Charles M. McKenna, John S. Nagel, Malcolm L. Harris, Austin A. Hayden and Robert H. Herbst were appointed members of a committee to devise a plan for the consideration of the council at the meeting in October.——The North Shore Branch of the Chicago Medical Society will open the season with a dinner, lecture and dance at the Sheridan Plaza Hotel, September 8. Following the dinner, Dr. Carl O. Schneider will give a travel talk.——At the annual convention of the International Association of the Deaf, August 15-17, Arthur I. Roberts, Chicago, was elected president.

LOUISIANA

New Memorial Hospital.—The widow of Leonce M. Soniat will erect a charity hospital in New Orleans as a memorial to her husband. The hospital, which will be conducted by the Sisters of Mercy, will be located in the building known as the St. Luke's Sanatorium, which was recently sold to Mrs. Soniat for $100,000.

MARYLAND

Rural Towns Need Physicians.—In order to provide medical treatment for persons in the rural districts of Maryland, Dr. John S. Fulton, state health director, announces that it may become necessary to advertise for practitioners. There is need for more physicians in Anne Arundel County and in some sections of the eastern and western shore. A laboratory system has been successful in Maryland in bringing to rural physicians some of the facilities of the larger cities.

Infant Mortality in Baltimore.—The U. S. Department of Labor, through the children's bureau, has recently published the results of an extensive investigation of infant mortality and its causes in Baltimore. A summary of the findings of the report is as follows:

Poverty, employment of mothers outside the home, housing below the proper standard, short intervals between births, and the deaths of mothers at or soon after childbirth were among the conditions causing high death rates among certain groups of babies under one year of age in Baltimore.

The mortality in the entire group of 10,797 legitimate births studied was approximately the same as the infant mortality in the cities of the U. S. birth registration area for the same year.

Mortality rate markedly above the average for the entire Baltimore group occurred among the colored families, foreign-born Polish families, and the very poor native white families.

Low mortality rates were found among the babies of foreign-born Jewish mothers and in families of the highest earnings groups.

Breast-fed babies in every group of the population had lower mortality than ratificially fed babies in the same group.

Eliminating differences in color and nationality and considering only the babies born to native white mothers, the facts showed that infant mortality rose as the fathers' wages fell: In the poorest families studied about one baby in six died within the year; in the most prosperous families about one baby in twenty-six died within the year.

Employment of the mother away from home during pregnancy was accompanied by a high percentage of premature births and high infant mortality. Room congestion and lack of sanitary equipment in the house were accompanied by death rates above the average.

First-born babies had a mortality slightly higher than second or third babies.

Babies of mothers under twenty and of mothers of thirty-five years or older showed higher mortality rates than other infants.

Births following a preceding birth by an interval of less than two years had a higher mortality than births occurring after a longer interval.

The babies born to the 105 mothers who died within the year following the babies' birth had the highest mortality in the entire group. When the mothers died within two months after the child's birth the infant mortality rate became six times as high as the rate for babies whose mothers lived.

MASSACHUSETTS

History of the Massachusetts Medical Society.—All of the manuscript of the "History of the Massachusetts Medical Society" has now been put into type, the illustrations are finished, and proof reading is in progress. Subscriptions for the history should be sent to Mr. James F. Ballard, Boston Medical Library. The secretary of the society has given seven years to the preparation of the book.

Course in Psychiatric Social Work.—The School of Social Work of Simmons College, Boston, has opened a department of psychiatric social work which will deal with the adjustment of persons suffering from mental disease and the study of delinquency, crime and all forms of abnormal behavior. The work, which will cover a period of two years, will be under the direction of Dr. Karl M. Bowman, chief medical officer of the Boston Psychopathic Hospital.

MINNESOTA

Hospital News.—The Cloquet Hospital has been purchased by Dr. Franklin W. S. Raiter. It will be operated as a general hospital open to all physicians in Cloquet and vicinity. Dr. Roy F. Raiter, now at the Cincinnati General Hospital, Cincinnati, will be associated with his brother at Cloquet.

Minnesota Sanatorium Association.—At the annual meeting of the association at Wadena the first week in August, Dr. Maurice G. W. Milan, Thief River Falls, was elected president; Drs. Leopold G. Guyer, St. Paul, and Jacob H. Bendes, Oak Terrace, vice presidents, and Miss B. E. Lindberg, St. Paul, secretary.

Health Exhibits at State Fair.—At the Minnesota State Fair to be held in Minneapolis, September 1-8, exhibits of

interest to physicians are being planned by the state department of public health. Notable among these is the cancer exhibit which was shown in San Francisco at the annual session of the American Medical Association; a pneumonia prevention exhibit; a posture contest for children, and exhibits on infant welfare and child hygiene.

Personal.—Dr. Chris M. S. Sampson, U. S. Public Health Service Hospital No. 61, Staten Island, N. Y., and formerly chief of the physiotherapy service of the U. S. Army General Hospital, Lakewood, N. J., will give a series of lectures before the Hennepin County Medical Society in Minneapolis, September 17-21.——Dr. Marshall Hertig, Minneapolis, has been appointed epidemiologist of the expedition to go to China in December to study dumdum fever.

Psychiatric Clinic Established.—A psychiatric clinic will be opened at the University of Minnesota, Minneapolis, in October, to deal with intractable and mentally deficient children. It will be financed by the Commonwealth Fund of New York. The clinic, which will be in charge of Dr. V. V. Anderson, New York, and Dr. Lawson Lowrey, Boston, will be conducted one year, and, if successful, probably will be followed by permanent clinics in Minneapolis and St. Paul.

MISSOURI

Medical Association of the Southwest.—The newly formed Kansas City Clinical Society will entertain the Medical Association of the Southwest with a clinical program, October 8-13, following their annual sessions in that city, October 4-8. Sectional specialty clinics and conferences are being arranged by the various medical societies of Kansas City. Among the speakers will be: Drs. John B. Deaver, Philadelphia; Joel Goldthwait, Boston; Lewellys Barker, Baltimore; Henry Dwight Chapin, New York; Reuben Peterson, Ann Arbor, Mich., and Joseph C. Beck and Peter Bassoe, Chicago.

Illegal and Advertising Practitioners Leaving.—Following the intensive campaign against advertising "doctors" in St. Louis, by the St. Louis *Star* and Health Commissioner Starkloff, the following results have been obtained:

The Coloni Laboratories, advertised as a "Radio Active Ohmage Master Machine, The World's Wonder," has been closed by the health department and all persons connected with it removed. The Associated Doctors have left the city with the issuance of warrants for the arrest of William M. Kemp, head of the concern. The "Electro Medical Offices," conducted by Henry Wasson Baskette, have been closed.

Warrants have been issued for the arrest of F. C. Blattner, part owner of the European Clinic, charging him with practicing medicine without a license, and J. French, Blattner's partner, has announced that the European Clinic is closed.

The offices of Edward L. Cooley, who advertised "The Cooley Way to Health," have also been closed.

Personal.—Drs. Franklin H. Broyles and William J. Harned, Bethany, were elected president and secretary-treasurer, respectively, of the Harrison County Medical Association, recently.——Dr. Bethune C. Bernard has resigned as superintendent of the Robert Koch Hospital, Koch, and Dr. Hyman I. Spector, chief resident physician, has been elected to succeed him.——Dr. George A. Johns, St. Louis, for twelve years superintendent of the City Sanatorium, has been appointed superintendent of the new St. Louis Training School for Feebleminded.——Dr. Jabez N. Jackson, Kansas City, was the guest of honor at a meeting of the Dallas County Medical Society, at Dallas, Texas, August 23. Dr. Jackson also took part in the dedication of the New Methodist Hospital of Dallas.

Malaria Survey of Railroad Made.—The U. S. Public Health Service in a bulletin, recently issued, sets forth the results of a malaria survey of the Missouri Pacific Railroad lines south of St. Louis, made for the purpose of determining the prevalence of malaria among employees of the railroad and to ascertain the effect of the disease on operating cost and railroad revenues. It was found that during the last twenty-three years, the number of employees given hospital treatment for malaria averaged more than 1,000 annually. This number constitutes 35 per cent. of all hospital admissions and 45 per cent. of all sick cases. For the same period injuries and surgical cases combined totaled only 75 per cent. of the malaria admissions. In 1921 fifty per cent. of all medical admissions for one hospital were for malaria, in addition to 4,000 who received outpatient treatment for malaria. The hospital malaria rate was found to be eight times higher among employees working south of St. Louis, than among those west of that point. The rate for the entire system (1920-1921) was 11.5 per hundred. The highest hospital malaria rate among the groups on the Southern Division was 79.7 found among the bridge and building crews and the extra gangs. The lowest rate was 11.0, that of the shopmen.

NEBRASKA

Hospital News.—Owing to the serious illness of Dr. Stuart A. Campbell, owner of the Campbell Hospital, Norfolk, it is proposed to sell the institution to the Lutheran Church for $120,000.——Construction has commenced on the Good Samaritan Hospital at Kearney, which, when equipped, will cost $250,000. It is expected the institution will be ready for patients by the spring of 1924.

NEW YORK

Hospital Association Meets.—The Eastern Long Island Hospital Association met in Orient, L. I., August 20, when it elected directors, among whom are Dr. J. H. Maisball and Dr. Clarence C. Miles. The annual report of the hospital shows that 507 patients were admitted last year and there were but sixteen deaths in the institution.

Typhoid in Elmira.—Infected ice is believed responsible for a typhoid epidemic in Elmira, which is being investigated by Dr. John A. Conway, district commissioner of the state health department. A warning has been issued against using river ice in water or other drinks, and all persons have been advised to be vaccinated at once against typhoid fever.

Health Exposition Date Changed.—The opening date of the National Safety-Health-Sanitation Exhibition at the One Hundred and Sixth Infantry Armory, Brooklyn, has been changed from October 20 to November 17, in order to give the National Exhibition Company, which is in charge of the arrangements, more time for preparation. The exhibition is given with the approval of the American Society of Safety Engineers, in cooperation with the city health department, the Medical Society of Kings County and other organizations. Among those on the honorary advisory committee are Senator Royal S. Copeland, Dr. Carleton Simon, Dr. Simon Blatteis, Dr. Frank Monaghan and representatives of a number of civic organizations.

Unknown Epidemic in Children's Institution.—About July 18 a mysterious epidemic started among the boys of the New York Catholic Protectory in the Bronx and spread until about 150 boys were attacked. The epidemic is now apparently under control. The cases occurred four or five at a time, and after twenty-four hours as a rule recovery was complete. The chief symptoms were muscular pains, slight cyanosis, difficulty in breathing, occasional headache and vomiting, a temperature between 100 and 101 and a somewhat accelerated pulse. The health department has been unable to find any evidence of food poisoning, and epidemiologists sent to the institution to ascertain the cause of the outbreak have been baffled. Dr. William H. Pound, acting commissioner of health, has expressed the opinion that the disease is probably a mild influenza. The symptoms are said to be similar to those of the so-called "devil's grip" now prevalent in eastern Virginia.

New York City

University News.—In order to provide nearby quarters for students, New York University has purchased for $250,000 the five-story apartment house at the southwest corner of University Avenue and One Hundred and Eighth Street.

Personal.—Charles A. Browne, Ph.D., chairman of the New York section of the American Chemical Society, has been appointed chief of the bureau of chemistry of the U. S. Department of Agriculture, Washington, D. C., effective, October 1. He succeeds Dr. Harvey W. Wiley.——Drs. Samuel Lloyd and C. Winfield Perkins were recently elected delegates to the American Legion state convention to be held in Saratoga Springs, September 13-15.——The honorary degree of doctor of laws was conferred by the University of Glasgow, June 21, on Dr. Graham Lusk, professor of physiology in Cornell University Medical School, New York.——Dr. Austin Flint and Dr. Oscar H. Rogers returned from Europe on the *Adriatic*, August 25.

OHIO

Public Health Conferences.—District health conferences of workers of the state public health association will be held in Columbus, September 10; Chillicothe, September 11; Dayton, September 14, and Lima, September 24, in connection with the campaign against tuberculosis.

Fines for Chiropractors.—J. A. Lozier and E. R. Sevitz, chiropractors of Ashland, were fined $100 each and costs in the police court, August 15, for practicing medicine without a state license.——Seven chiropractors of Canton were fined sums varying from $50 to $25 each, August 15, for practicing medicine without a license, according to reports.

Jail Condemned as Unhealthy.—The state department of health has pronounced the Columbiana County Jail at Lisbon a menace to health, and has condemned the building. Unless a new jail is provided, an order will be issued prohibiting the use of the building, and prisoners will then have to be confined in other counties.

Hospital News.—The new St. Thomas Hospital to be erected at Akron will be named in honor of the Rev. Thomas Mahar. A campaign has been started to collect $400,000.——The contract has been let for the erection of the three new buildings for the Ohio Hospital for Epileptics which will have a capacity of 1,800 beds.——A new building for tuberculous patients will be added to the Dayton State Hospital. It will accommodate thirty patients.——Work has been started on an addition to Springfield Lake Sanatorium, East Akron, which will cost about $180,000. The new building will house seventy-five children.——The contract has been awarded for the erection of the new sixty-room City Tuberculosis Hospital, Warrensville, at a cost of $250,000.——A successful campaign for funds has made possible a five-story addition to the Miami Valley Hospital, Dayton.——Officials of St. Francis Hospital, Columbus, are planning an addition to care for surgical patients and to provide a home and chapel for the Sisters of the Poor of St. Francis. Work will start early in the new year. The structure will be five stories high. The hospital is asking the public for contributions to a $200,000 fund for this purpose.——The Hamilton County Order of Eastern Star Home and Hospital, Cincinnati, was formally dedicated, August 11.

OREGON

Sterilization Law Enacted.—A new sterilization law, providing for a state board of eugenics comprising the state board of health and the superintendents of the two state hospitals for mental disease, as well as those of the state institution for the feebleminded, and the state penitentiary, was passed by the last session of the legislature. This board will examine into the innate traits, the mental and physical condition, the personal records, and the family traits and histories of all persons reported by the superintendents to the board. The superintendents are required to report to the board quarterly all persons who are feebleminded, insane, epileptic, habitual criminals, moral degenerates and sexual perverts who are likely to become a menace to society. If in the judgment of the board, procreation would produce children having an inherited tendency to feeblemindedness, insanity, epilepsy, criminality, or degeneracy, and there is no probability that the condition of such person will improve, then the board shall specify the type of sterilization to be performed. If the person does not consent at the end of twenty days' notice, a trial shall be had. The issue raised shall be whether the court shall affirm the findings of the board. The person may select his own physician, provided such physician is in the judgment of the board of eugenics competent to perform the operation.

PENNSYLVANIA

Insanitary Conditions in Prisons.—In the report of the July grand jury presented in the quarter sessions court, Philadelphia, July 22, prison conditions were described as a disgrace to the county. The recommendations were considered so far reaching that Judge McDevitt requested the jury to continue in session another week. The House of Correction, Holmesburg, was described as insanitary, and it was said that the prisoners were given poor food and were cruelly treated, "strapping" and the "spread eagle" being administered as punishment. Dope traffic among prisoners was also found in that institution. The authorities were blamed for the overcrowded condition at Eastern Penitentiary, where 1,654 inmates were found in 800 cells. In fifteen cases at Moyamensing, the grand jury found that drug addicts were housed in cells with those who had never used narcotics, and it was said that prisoners were furnished with drugs when being transported to and from the city hall courts. In the final recommendations, the grand jury suggested that physicians be impaneled and taken to the institutions with the board of prison inspectors, to give expert advice in regard to improvements.

Philadelphia

Personal.—Dr. Charles H. Frazier, professor of surgery at the University of Pennsylvania Medical School, Philadelphia, returned, August 25, from London, England, where he attended the International Surgical Conference.——Dr. Joseph Leidy has been commissioned lieutenant-colonel in the medical division of the Officers' Reserve Corps. Dr. Leidy served during the World War as medical director of gas defense with the Thirtieth Division.

A Tuberculosis Department.—The director of public health, Dr. Blair Spencer, has announced that he will request the council for authority to establish a division of tuberculosis, and that he will seek to have the city control the twelve tuberculosis clinics which are now under state judisdiction. The tuberculosis division, if authorized, will be located at 1724 Cherry Street, where there is now a clinic. A physician will be in charge, and an organization will be formed for the prevention of this disease.

Chair of Public Health Established.—A chair of public health administration has been established at the Women's Medical College of Pennsylvania, Philadelphia, it was announced, August 18. Dr. Lydia Allen DeVilbiss of the U. S. Public Health Service, Washington, D. C., has been appointed first professor of public health administration. Dr. DeVilbiss was formerly director of the division of child hygiene for the Kansas State Board of Health, director of the Better Babies' Bureau of New York City, and lecturer for the New York State Department of Health.

TEXAS

Hospital News.—Work will shortly start on the new $60,000 extension to Stamford Sanatorium, Stamford, providing an additional twenty-four beds.——Plans and specifications for the proposed $100,000 city-county hospital at Galveston have been approved by the county commissioners' court. The plans call for the erection of two wards for the treatment of the insane, one for men and the other for women.

UTAH

Compensation for Medical Services.—A new schedule of medical and surgical fees permissible under the Workmen's Compensation Act has been issued by the Utah State Industrial Commission. The maximum fees as shown on the schedule may be exceeded on the discretion of the commission, but, regardless of the maximum fees so established, the ruling of the commission will hold the physician's fee down to the prevailing charges for similar work in the community. One of the rules provides that only one half of the scheduled fee will be allowed if the case terminates fatally within seven days of the date of operation.

VIRGINIA

Personal.—Dr. Irving S. Barksdale, Richmond, has been elected associate professor of physiology at the Medical College of South Carolina, at Charleston.——Drs. Alexander F. Robertson, Jr., Staunton, and Harry G. Middlekauff, Weyers Cave, were elected president and secretary, respectively, of the Augusta County Medical Society at the annual meeting in Churchville, August 1.

CANADA

Royal Commission on Venereal Disease.—At the recent meeting of the Canadian Social Hygiene Council in Edmonton, Alberta, a resolution asking that the federal government appoint a royal commission to investigate and report on venereal disease was adopted.

Personal.—At the annual reorganization of the Halifax Health Board, Dr. John L. Churchill was reelected chairman.——Dr. Henri A. Lafleur, Montreal, has been nominated by the governor general to succeed the late Sir Thomas G. Roddick on the Medical Council of Canada.——Sir Henry Gray of Aberdeen, Scotland, has been appointed surgeon-in-chief of the Royal Victoria Hospital, Montreal, to succeed Dr. George Armstrong, resigned.——Dr. Norman Viner and Dr. Nathan Freedman were elected president and secretary-treasurer, respectively, of the recently organized Montreal Clinical Society.——According to reports at the Edinburgh (Scotland) International Congress of Physiology, Dr. Frederick B. Banting, Toronto, may be presented as a candidate for a Nobel prize this year.——Dr. J. J. R. MacLeod of the University of Toronto, who delivered an address on "Insulin" before the Congress of Physiology at Edinburgh (Scotland), has been elected a fellow of the Royal Society.——Prof. H. M. Lancaster, director of laboratories in the Provincal Board of Health, has resigned after twelve years of service to accept a position as head of the division of food and drugs of the Federal Department of Health, Ottawa. Dr. Charles M. Anderson has been appointed to succeed Professor Lancaster

as director of laboratories.——The degree of doctor of laws was conferred on Dr. Charles J. C. O. Hastings by the University of Toronto, recently.——Dr. Helen Macmurchy, Ottawa, recently had the distinction of being the first woman physician to become M.D. of the University of Toronto.

GENERAL

American Roentgen Ray Society.—The twenty-third annual meeting of this society will be held in Chicago, September 18-21. The Caldwell lecture will be delivered by Dr. Percy Brown, Madison, Wis. Among the foreign visiting speakers will be: Drs. Robert Knox, England; Gustav Bucky, Germany; Paul C. Hodges, China; Carlos Heuser, Argentina, and Walter Friedrich, Germany.

American Ophthalmological Society.—At the annual meeting of the society in Colorado Springs, Colo., June 19-21, the following officers were elected for the ensuing year: president, Dr. Alexander Duane, New York; vice president, Dr. Cassius D. Wescott, Chicago, and secretary-treasurer, Dr. T. B. Holloway, Philadelphia. Hot Springs, Va., was selected as the meeting place for the 1924 session.

President Reappoints League Narcotics Envoys.—President Coolidge has authorized the reappointment of Dr. Rupert Blue, U. S. Public Health Service; Representative Porter of Pennsylvania, and Bishop Charles H. Brent, Buffalo, as representatives of the United States on the League of Nations committee having to do with regulation of opium and other narcotics. The three delegates will attend the next meeting of the convention in Geneva, Switzerland.

Rockefeller Fellowships Awarded.—The Medical Research Council announces the award of Rockefeller Medical Fellowships, tenable in the United States during the academic year 1923-1924, to the following: Dr. John Crighton Bramwell, Manchester Royal Infirmary; Dr. Norman M. Dott, University of Edinburgh; Dr. Helen Ingleby, Victoria Hospital for Children and South London Hospital for Women, and Hugh K. Ward, member of the scientific staff of the Medical Research Council and working in the department of pathology at the University of Oxford. Further awards may be made during the year.

Survey of Eye Conditions.—The Eye Sight Conservation Council of America has announced that it is about to undertake a nation-wide survey of eye conditions. A previous investigation by this organization indicated that in this country 25,000,000 persons gainfully employed have eye defects. The research program which has recently been adopted aims to discover the effect of incorrect vision on production. Among the objects of inquiry will be the extent of color blindness, the number of those blind in one eye, the number totally blind, hours lost due to eye accidents, equivalent wages for lost time, use of goggles, and the cost of eye protection service.

Nurses to Work Among Indians.—Three Red Cross nurses will continue to do public health work at Indian reservations, as a result of action taken by the American Red Cross in authorizing the continuance of their services after the completion of their first year. These nurses were assigned to promote health conditions among the Indians at the request of the Commissioner of Indian Affairs. They began work, Nov. 15, 1922. The action of the American Red Cross to continue their services was effected when appropriations were included in its annual budget to cover the expense. It is planned for the supervising nurses to study health conditions among the Indians and make a comprehensive report to be submitted to the Bureau of Indian Affairs and to the American Red Cross.

Proposed Eugenic Laws.—Prof. Irving Fisher, Yale University, recently made public plans of the Eugenics Society of the United States. Among the proposed legislative measures are the following:

Registration of family pedigrees.
Segregation of criminal defectives.
Setting the minimum marriage age at 18.
Status concerned with illegitimacy.
Mothers' pension.
Regulation of immigration on the basis of superiority to the American average by mental test.
Eugenic education.
Systematic mental testing of children at 10 and 16 years.
Removal of present restrictions on information and materials regarding contraception.
Encouraging parenthood on the part of those best endowed with hereditary traits.
Making "dysgenic inheritable defects" adequate grounds for divorce.

Medical Pension Claims.—Instructions issued, August 17, by Commissioner of Pensions Washington Gardner, with the approval of Secretary of the Interior Hubert Work, to the medical referee of the U. S. Pension Bureau, affecting reports of boards of medical surgeons throughout the country before whom applicants for pensions appear for medical examinations, request that findings of medical surgeons of the Pension Office in examining into the disability of war veterans applying for pensions should be liberal yet within the law. The instructions state further that in adjudicating claims for pensions the medical referee of the Pension Bureau must not set aside the findings of disability by examining surgeons without cogent reasons, for the reason that "While these surgeons act in an advisory capacity and their findings are not binding, yet it should be borne in mind that they are reputable practitioners in the community, that they have seen and examined the claimant, and as a result of personal observation and contact, have arrived at a conclusion that the man before them is disabled and to a degree estimated by them." Of the veterans of the Civil War, the instructions read, "the boy of 18 in 1865 is the man of 76 today, and it is safe to conclude that there are very few who make claim to the $72 rating under the act of May 1, 1920, who are not entitled to it."

Juvenile Court Standards.—Standards by which juvenile courts throughout the country can measure their work for children have just been published by the U. S. Department of Labor through the children's bureau (under the name of Juvenile Court Standards) in the report of a national committee consisting of prominent juvenile court judges, probation officers and psychiatrists from many states. It is the product of two years' study of the best methods of safeguarding the interests of the child through the courts. In drafting the standards recommended, the needs of rural as well as urban communities were considered. It is recommended that every community should have a children's court, equipped to deal with all cases in which a child is in need of the protection of the state either because of his own conduct, or the failure of parents or guardians to provide proper care; that the court be able to obtain jurisdiction over children at least until the age of 18 and that children taken into custody should be shielded from public observation and from conditions which might mark them as criminals, as, for instance, transportation in a police van or escort by a uniformed police officer. The report outlines methods through which each child may be given scientific treatment adapted to his needs. It places emphasis on the care of the child in his own home and his own community, except when adequate investigation shows this not to be in the child's interest. The children's bureau will endeavor to place the report in the hands of all judges and probation officers and others engaged in juvenile court work.

FOREIGN

Deaths Due to Wild Animals.—Statistics for the last year show that 3,263 people were killed in India by wild animals, tigers being responsible for 1,603; leopards, 509; wolves, 460; bears, 105; elephants, 55; hyenas, 9; wild boars and pigs, 90, and crocodiles and alligators, 255. The mortality from snake bites was 20,090.

The Campaign Against Malaria in Italy.—According to the *Policlinico*, the three year campaign against malaria, as of record June 30, was so successful that, of the 130,000 malaria patients treated, 50 per cent. were certified as cured by the physicians treating them; 32 per cent. were materially improved; 6 per cent. had emigrated; 1 per cent. had died.

The International Conference on Leprosy.—Our French exchanges state that delegates from twenty-three countries gathered at Strasbourg, July 28, to discuss ways and means for preventing the spread of leprosy. Jeanselme reviewed the work accomplished at the two preceding conferences, at Berlin in 1897, and at Bergen in 1909. The inaugural meeting of the conference was followed by a banquet tendered by the government.

International Health Conference in Japan.—The departments of home affairs, education, agriculture and commerce are preparing plans for the third international conference of health officials which it is expected will be held in Tokyo in the fall of 1925. The first conference was held in Belgium in 1922, under the auspices of the International Health Preservation Commission. At the last meeting it was decided to hold the 1925 meeting in the Far East. No definite program has yet been announced.

Broadcasting Propaganda Against Tuberculosis.—The *Presse médicale* gives the details of the official ceremony in the Eiffel Tower, August 1, in which the representative of the minister of hygiene and Professor Calmette of the Institut Pasteur broadcasted an appeal to the homes of France and the world to rally for the extermination of tuberculosis. Every French man and woman was urged to use his or her influence in every way, by word or pen or deeds or money to spread the knowledge of the curability of the disease, of the means for combating it, and the means for systematic prophylaxis.

Illegitimacy Abroad.—Major Carpenter recently presented the following figures on illegitimacy in different countries in the House of Commons, London, on request:

Countries	Year	Number	Rate Per 10,000 Total Live Births
England and Wales.....	1921	38,618	455
Scotland	1921	8,756	711
France	1913	65,568	879
Italy	1917	32,933	477
Belgium	1913	10,975	641
Holland	1920	4,112	213
Norway	1917	4,466	699
Sweden	1919	18,060	1,494

Japan Aids Medical Research.—The Japanese government's subsidy for the encouragement of medical research for the present year (amounting to about 53,000 yen) has been given to some fifty research workers in fifteen medical colleges, eight special schools of medicine, pharmacology and dentistry, and two institutes. Some of the beneficiaries are: Prof. T. Irisawa of the Tokyo Imperial University Medical College for his work on "Influence of Rice-Bran Extract on Beriberi"; Prof. J. Simazomo, Kyoto Imperial University Medical College ("Nutritive Value of Japanese Food"), and Prof. M. Yamado of the Nagasaki Medical College ("Therapy of Filaria Bancrofti").

Chinese Medical Colleges.—The American section of the board of directors has authorized the China section to proceed at once with the erection of the Belle H. Bennett Memorial Building of the Union Medical School for Women, Shanghai; it is expected, the building will be ready for use by the Chinese New Year in 1924.——Dr. Tatsukichi Irisawa, head of the Medical Department of the Tokyo Imperial University, Japan, left for China, July 15, to investigate medical educational needs in that country. This is the first step of a plan to be undertaken by the Japanese government, for the erection of a medical school in China. The hospital to be erected in connection with the medical college will cost approximately 3,500,000 yen ($1,750,000), according to reports.

People's League of Health.—At a recent meeting in London between representatives of the Trades Union Congress General Council and a deputation from the medical council of the People's League of Health, it was proposed that the propaganda of the league be used for the health education of the workers of the country. Among the speakers were Sir Alfred Fripp, Dr. Jane Walker, Sir Harry Baldwin, Sir Frederick Mott, who stated that while education in health was increasing steadily, that which affected mental health was almost entirely neglected. Prof. C. S. Meyers, pointed out that health education was not only necessary from the employer's point of view, but actually meant larger profits. Insufficient light, insufficient leisure, insufficient air and anything else that had an adverse effect on health made workers discontented and resulted in diminished output.

New Foreign Journals.—A new journal was published last month in Copenhagen known as the *Acta Ophthalmologica*, edited by Dr. K. K. K. Lundsgaard, with the aid of correspondents in Christiania, Helsingfors, Lund and Upsala. The journal will be published in English, French and German.——A new quarterly medical periodical, the *British Journal of Anaesthesia*, appeared in July. It is conducted by an editorial board of twelve anesthetists in various centers in Great Britain, and is edited by Dr. H. M. Cohen, anesthetist, St. Mary's Hospital, Manchester. The annual subscription is $9.50. In the first issue, containing fifty-four pages, is an article by Drs. J. T. Gwathmey and E. P. Donovan of New York, dealing with painless childbirth by synergistic methods.——A new journal, entitled the *British Journal of Experimental Biology*, with Dr. F. A. E. Crew, of Edinburgh University, Scotland, editor, will be issued quarterly, it is announced.

International Union Against Tuberculosis.—The council of directors of the Union internationale contre la tuberculose held its annual meeting in Paris, July 26, at the headquarters of the League of Red Cross Societies, under the presidency of Dr. Dewez of Brussels. Prof. Léon Bernard, secretary general, gave an account of the development of the union since the Brussels conference. It was decided that the following questions should be placed on the agenda of the conference to be held at Lausanne this month: (1) Relations Between Pregnancy and Tuberculosis (Professor Forssner, Stockholm); (2) Does There Exist Naturally or Can There Be Produced Artificially Saprophytic Forms of Koch's Bacillus Which Might Become Virulent Tuberculosis Bacilli? (Professor Calmette, Paris); (3) Effects of the Organization of the Antituberculosis Campaign in Different Countries on the Decrease in Tuberculosis Mortality (Sir Robert Philip, Edinburgh). The report of Professor Bezançon, Paris, on "The Respective Value of Technics for Research of Koch's Bacillus for Diagnosis of Lesions in Human Tuberculosis" gave rise to an interesting discussion.

An International Pharmacopeia.—At the annual meeting of the International Pharmaceutical Federation, held in conjunction with the diamond jubilee session of the British Pharmaceutical Conference, in London, in July, the president, Professor van Itallie, dean of the University of Leyden, devoted a large part of his address to the problem of an international pharmacopeia. He pointed out the difficulty caused by the absence of uniform standards in medicine, and advised that a central international bureau should be formed to do the work of revision for all pharmacopeias. It was suggested that the preliminary work of documentation should be continued in the faculties of medicine and pharmacy of every country, and, when all the information necessary for unification had been obtained, a conference of medical men, pharmacists and analysts should meet under the auspices of the health department of the League of Nations and decide which formulas and methods should be universally adopted. The federation represents twenty countries, and delegates from France, Italy, Spain, Belgium, Holland, Roumania, Greece, Australia, South Africa, the United States, Czechoslovakia, and other nations were in attendance at the sessions.

Personal.—Dr. J. H. Anderson, senior lecturer in anatomy, and Dr. S. W. Patterson, director of the Walter and Eliza Hall Clinical Research Laboratory, University of Melbourne Faculty of Medicine, Melbourne, Australia, have resigned. Drs. L. E. Hurley and C. H. Kellaway have been appointed to succeed them.——Dr. A. Lustig, senator and professor of general pathology at Florence, has been invited to inaugurate the new quarters of the Biologic Institute at Buenos Aires and the Italian Hospital, and has sailed for Argentina. He is accompanied by Prof. P. Alessandrini of Rome and Dr. L. Lenzi, chief of staff of the Italian hospitals of Buenos Aires.——The eightieth birthday of Senator and Professor (emeritus) Camillo Golgi was celebrated recently with much ceremony by municipal and scientific circles at Pavia. His name was conferred on the Institute of Histology, and an album was presented to him with thousands of signatures and congratulations.——The *Presse médicale* reproduces the address made by Dr. C. L. Gibson of New York as he placed flowers on the tomb of Pasteur in the name of the American Surgical Association. Besides the officers of the Institut Pasteur, the foreign members of the society were present at the ceremony.

Deaths in Other Countries

Dr. **Flora Murray,** for several years officer-in-charge of the Endell Street Military Hospital, London, July 28, following an operation.——Dr. **William R. Young** of Sydney, Australia, July 7.——Dr. **Charles Killick** of Bradford, England, of septicemia.——Dr. **Stephan von Apathy,** professor of zoology at the University of Cluj, formerly Kolozsvar, aged 60.——Dr. **C. Poli,** a leader in the campaign against tuberculosis in Italy.——Dr. **H. Boruttau,** professor of physiology in the University of Berlin, aged 54.

CORRECTION

Dr. Hadley's License Not Revoked.—THE JOURNAL (Aug. 11, 1923, p. 482) stated it was reported that the license of Dr. Frederick H. Hadley, San Francisco, was revoked, May 29, by the state board for assisting a chiropractor in the treatment of a patient. This information was obtained from the San Francisco *Examiner*, July 25, 1923. THE JOURNAL has since learned that Dr. Hadley's license was not revoked. The board of medical examiners returned a finding of guilty and placed Dr. Hadley on two years' probation. Judge Trout of the superior court of California recently set aside the finding of the board.

Government Services

Proposed Service Legislation

Legislation will be proposed, it is said, to benefit the medical corps of the navy in the way of promotions. Existing law limits promotions in the upper grades of the navy medical corps to the number of officers allowed in the ranks of rear admiral, captain and commander. The proposed legislation for promotion in the staff corps, which the Navy Department approves, as applied to the medical corps will give medical officers an equal chance for promotion with all officers in the navy of the same length of service, regardless of the number in the medical corps. A number of vacancies still exist in the medical corps of the navy. Information concerning them may be obtained by addressing the Surgeon General of the Navy, Washington, D. C.

Recommendations for legislation, to meet special needs of the medical corps of the army, have been made to the legislative committee of the War Department by Surgeon General Ireland. It is proposed to amend that section of the act of June 4, 1920, which relates to duty with combatant troops for at least one year in every five. It is expected that the Secretary of War will urge Congress to modify existing requirements as to assignment to duty with troops of staff officers whose professional or technical services are more useful in other capacities. It is proposed that officers of the medical department shall serve with combatant troops only during the first ten years of commissioned service and then only for a period of two years. It also is proposed to credit for retirement officers of the medical corps with services as contract surgeons.

Hospital Head Named

Lieut.-Col. Paul C. Hutton, M. C., U. S. Army, Washington, D. C., has been assigned as commanding officer of the Fitzsimons Army Hospital, Denver.

The Third Interchange Visit of Health Officers

The health section of the League of Nations, at Geneva, Switzerland, has informed the U. S. Public Health Service at Washington that representatives from Europe, South and Central America will soon arrive in this country to attend the third interchange visit of health officers. The European representatives of this group will arrive in New York, September 10, and for three months will visit various parts of the United States to observe health conditions and study the activities devoted to their control. The first interchange visit was held in England, February, 1923, and the second in Italy, May, 1923. The U. S. Public Health Service participated in the first interchange visit by sending Dr. A. M. Stimson and Dr. G. A. Kampf, who were in Europe at the time, to attend the sessions. Dr. L. L. Williams, Jr., attended the sessions in Italy. The U. S. Public Health Service is arranging a program for the benefit of these foreign health officials during the tour of the United States. The names of these physician officials and the countries they represent are as follows:

France: Dr. L. Aublant, inspecteur principal des services d'hygiène; Dr. M. Bussière, directeur des services d'hygiène de Montlucon.
England: Dr. Thomas Carnwath, Ministry of Health, London; Dr. Charles Porter, London.
Italy: Dr. F. Piccininni, ufficio sanitario de Porto Napoli.
Russia: Dr. Slonewski, Sanitary Epidemic Bureau, Moscow; Dr. Marzeew, chef de Sanitary Epidemic, Kharkof, Ukraine; M. Ivanitski, sanitary engineer, Moscow.
Spain: Dr. R. Ferandez-Cid, inspecteur provincial de la santé publique San Sebastian.
Holland: Dr. D. J. Hulshoff Pol, inspecteur gouvernemental de la santé publique La Haye.
Belgium: Dr. van Boeckel, directeur de laboratoire de l'administration de l'hygiène, Brussels.
Greece: Dr. Pringos, Greek Legation, Paris.
Poland: Dr. J. Batko, Provincial Health Office, Cracow.
Jugoslavia: Dr. Ivo Kuhn, referent de ministere de la santé publique, Belgrade.
Germany: Dr. Sannemann, % American Line, 1 Broadway, N. Y. (To join in America.)
Switzerland: Dr. J. Hunziker, chef du service d'hygiéne du Canton de Bale-Ville.
Norway: Dr. E. Andersen, médecin de préfecture, Lillehammer, Norway.
Mexico: Name not yet received.
San Salvador: Dr. Segovia, director de sanidad, San Salvador.
Argentina, Brazil: Name not yet received.
Chile: Dr. J. Ducci, Santiago de Chile; Dr. C. Mayers, Santiago.
Canada: Dr. M. Seymour, chief sanitary commissioner Saskatchewan.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 13, 1923.

The Crisis in the Panel Service

The threatened reduction in the capitation fee which has led to crisis in the panel service has been discussed in previous letters. Negotiations with the government are being conducted by the British Medical Association with all the secrecy of the old diplomacy, which some enthusiasts hoped to see abolished after the peace of Versailles. The negotiations concern two things: the terms of service and fees. Those on the latter are regarded as so delicate that Dr. Brackenbury, chairman of the Insurance Acts Committee, stated at the recent annual meeting of the association that, if the propriety of certain measures being taken in the event of a struggle were discussed, things would have to be said which it would be unwise to publish at present. To avoid inconvenience and the putting of those who had to conduct negotiations in an impossible position, "Document M. 10" should be allowed to rest without discussion. The title of this mysterious document is "Organization of Insurance Practitioners in Consideration of and in the Event of a Refusal of the Terms Offered by the Government for National Health Insurance Work." It was consequently not discussed. However, some idea of its contents can be gathered from a motion against it which stated that any campaign conducted as was recommended would tend to alienate public opinion, would react injuriously on those not concerned in the contest with the government, would not be likely to receive the general approval of the profession, and would be contrary to its honor and interest. As previously explained, the crucial point of the contest is the refusal of the government to continue an addition of $0.50 to the capitation fee made during the period of high prices which followed the war and which continue now in less degree. The problem then becomes the obtaining of this sum from the "approved societies," which represent the greater part of the insured, and so far have shown themselves unwilling to pay.

The Smallpox Epidemic

The smallpox epidemic is declining considerably. During the week ending July 28, only fifty-one new cases were notified, as compared with 116 and 148 in the preceding weeks, in each of which one death occurred. As these were the only deaths, the epidemic has been very mild. Of the fifty-one cases, twenty-two occurred in Gloucester, the home of the leader of the antivaccinationists, Dr. Hadwen. One good result of the epidemic is that the town seems to have repented of its folly in neglecting vaccination. Since April the number of vaccinations there have averaged 2,000 a month. In Derbyshire, where the epidemic has continued for many months, a better condition is reported. Unfortunately, this awakening to the value of vaccination is almost confined to areas involved in the epidemic. In the country generally there are many potential Gloucesters—ill vaccinated places where the appearance of a single case is likely to give rise to an outbreak.

Medical Examination and Life Insurance

Referring to an announcement in the *Times* that a certain insurance company, following American precedent, intended to provide for its policyholders without charge an annual overhauling examination by its medical officers, Dr. Lauriston Shaw, physician to Guy's Hospital, has written a letter commending this proposal, as the average length of life of the policyholders would thus be increased. He suggests a modi-

fication to improve the scheme. Instead of inviting the policyholder to submit himself annually to examination by one of its medical officers, the company should offer a rebate on his premium to any policyholder who submits a certificate from a physician indicating that he has carried out a medical examination, including certain specified investigations, and has advised the policyholder as to the best course to remedy any defects disclosed. This certificate, which would be handed by the physician to the policyholder for transmission to the company, would not disclose the existence or nature of any defect that might be discovered. There would thus be avoided the not unnatural fear that a policyholder might feel that in submitting to the company's medical examiner there was a risk of disclosures that might later on prejudice attempts to increase the insurance. The policyholder, too, would feel confidence in the competence of an examiner chosen by himself and be more likely to act on professional advice offered to him. If such a scheme was introduced, it would give a great impetus to the movement for periodic medical examination of the apparently healthy, which would be a valuable means of safeguarding the nation's health. An objection to this scheme, which does not appear to have occurred to its author, is that insurance companies would not have the same confidence in reports from a policyholder's physician as in one from their own office.

The Museum of the Royal College of Surgeons

The National War Collection has been assembled in new quarters provided in the Museum of the Royal College of Surgeons. It contains more than 3,000 specimens. There is also a valuable collection of drawings illustrating injuries of blood vessels and gunshot wounds of the spine which Sir George Makins is arranging and cataloging. A noteworthy event in the history of the museum is the completion of the series which illustrates the principles of pathology. This work was commenced in 1910, but was interrupted by the war. In the words of the conservator, Sir Arthur Keith, for the first time in the museum "a complete and systematic treatise has been written not in words but in illustrative specimens." A large proportion of the prehistoric remains, human remains found in Britain during the past century, are preserved in the museum, and a new catalogue is being prepared of them. Mr. Alban Doran has almost completed the descriptive catalogue of surgical instruments in the possession of the college, and is now engaged on the last section—the surgical instruments used by barbarous and semicivilized peoples.

PARIS

(From Our Regular Correspondent)

Aug. 3, 1923.

Cooperation in Scientific Work

A plenary session of the International Commission on Intellectual Cooperation, instituted by the assembly of the League of Nations, has been held at Geneva under the presidency of Professor Bergson. The commission approved the report of its subcommittee on bibliography recommending, in view of the impossibility of establishing at the present time a complete international library, the coordination of libraries already existing in the principal centers. The subcommittee recommended also the publication of a bibliographic index and conferences of experts on analytic bibliography to coordinate the work of reviewers and existing libraries, and thus prevent duplication of effort.

The commission decided to transmit to the Council and to the Assembly of the League of Nations a draft agreement for the protection of property rights in scientific work, as elaborated by Professor Ruffini of Turin, formerly minister of public instruction in Italy. The request is made that the several governments establish protection for authors of scientific discoveries analogous to that accorded by law to the artist and the author. The establishment of an international agreement for the protection of scientific property rights would result in the creation of a new international league, which would rank with the two leagues now existing, the one for the protection of industrial rights and the other for the protection of artistic and literary property. Ruffini, in modeling his draft agreement, made use of the two French drafts, that of the French Confederation of Intellectual Workers (THE JOURNAL, May 19, 1923, p. 1467) and that submitted to the French parliament by M. Joseph Barthélémy, deputy from the department of Gers and professor in the law department of the University of Paris.

The Commission on Intellectual Cooperation adopted the following resolutions for promoting mutual aid in intellectual work:

1. The commission warmly approves the creation of national commissions on intellectual cooperation, such as have been established in the countries of central and eastern Europe.
2. The commission invites national commissions already created, and those that may be established later, to appoint delegates to meet with it to consider the best means of organizing mutual aid in intellectual work.
3. The commission begs the Council to request governments that are members of the League of Nations to lend moral and financial support to the endeavors of the national commissions.
4. The commission begs authority from the Council to accept donations from institutions that manifest an interest in its endeavors, such funds to be placed at the disposal of the national commissions.

CONDITIONS OF INTELLECTUAL WORK IN EUROPE

Various reports on the present conditions of intellectual work in the several countries were presented to the International Commission on Intellectual Cooperation. M. de Reynold, professor at the University of Bern, after investigating conditions in Switzerland, Germany, Holland, the Scandinavian countries and Luxemburg, and among Russian emigrants, has reached the conclusion that the intellectual life is suffering even in countries that remained neutral during the war. This is due, on the one hand, to the economic crisis, and, on the other hand, to the indifference of governments and people, especially of the younger generation, to the needs of science and art. M. Castella, who was chosen to make a special inquiry in Switzerland, declared that in that country an undermining of cultural studies is taking place; students are becoming more and more utilitarian. M. Luchaire, who took charge of the inquiry among the Latin races of Europe, also testifies to a falling off of interest in intellectual work that promises no immediate practical return.

International Control of the Sale of Narcotics, More Particularly Cocain

At the eighteenth Congress of Legal Medicine for French-speaking countries, which has been held in Paris under the presidency of Prof. Pierre Parisot of Nancy, the problem of international control of the sale of narcotics was discussed. In their communication, Drs. Courtois-Suffit and René Giroux, after pointing out that there had been considerable extension of the cocain habit (THE JOURNAL, Aug. 12, 1922, p. 569), discussed the present status of legislation for its control, not only in France but also in foreign countries. Speaking generally, legislation in foreign countries is less stringent than the French act of July 13, 1922, by the terms of which the courts must expel from a community, for a period of not less than five years nor more than ten years, all persons found guilty of having "facilitated" for others the use of toxic substances, whether by procuring a place for this purpose, or by any other means. In Germany, Italy, Switzerland, England and Belgium, the law is less rigid. This being the case, the League of Nations is called on to assume an important rôle in the campaign against the unwarranted use of toxic substances. Courtois-Suffit and Giroux

recommend special supervision over the production of narcotics in Germany and their restriction to purely medical needs. By strict control of poisons at their source and by surveillance at the frontiers of the country, the number of intoxications in drug addicts would rapidly diminish.

Dr. Vervaeck of Brussels emphasized the value of organizing police cooperation between the different countries for the suppression of the illegitimate use of narcotics. At present, such relationships are hampered by administrative and diplomatic formalities. In harmony with the authors of the papers mentioned, Vervaeck advocates stringent penal measures to aid in suppressing the traffic in contraband drugs, more especially, expulsion from the community and the infliction of fines commensurate with the enormous profits of the traffickers. As regards the treatment of drug addicts and drug traffickers who have been found guilty, he is opposed to all leniency and to the granting of paroles. Imprisonment for any period less than a year is ineffective; no cure is possible without a prolonged period of disintoxication. Drug addicts, when found guilty, should be placed in a psychiatric colony. On liberation, cocain addicts should be removed from urban centers to some spot where they will not be exposed to temptation and suggestion. Vervaeck recommends furthermore: (1) strict surveillance of governmental and private pharmacies; (2) discreet but effective supervision, by medical organizations, of prescriptions, which will doubtless reveal a certain amount of complacency on the part of the addict's physician; (3) extension of the application of the law to all narcotic specialties, many of which, in certain countries, may be secured without a physician's prescription, and (4) educative propaganda against this menace among adolescents and intellectuals, these groups being particularly prone to cocain addiction. Professor Balthazard called the attention of the congress to the relationships that exist between homosexuality and cocain addiction.

At the close of the discussion of the paper by Courtois-Suffit and Giroux, the congress passed the following resolution:

> In view of the increasing extent of the illegal traffic in cocain and other narcotics and the dangers arising from cocain addiction, the Congress of Legal Medicine hereby recommends that (1) prosecutions against traffickers be carried out indefatigably and that all measures for their repression be rigidly enforced; (2) international control be established in order to prevent importation and clandestine trade in narcotics; and (3) repressive measures be supplemented by educative propaganda. It would be in line with these proposals to organize lectures on this vital subject, for the purpose of spreading information in medical and pedagogic circles. A medical inquiry in the various countries on the gravity of the peril of narcotics would also be valuable.

BELGIUM

(From Our Regular Correspondent)

Aug. 3, 1923.

The Brussels Medical Conference

In previous years reference has been made to the instructive meetings of the Brussels Medical Conference. This type of congress certainly deserves to be more widely introduced, for, to judge from its success, it fills a genuine want. Its mode of organization has already been described in a general way. The session of 1923 so far surpassed all previous meetings that one feels justified in predicting the perpetuation of the system.

The practitioner who is kept by his duties or location from contact with hospital and university centers is enabled, through this conference, to bring his theoretical and practical education up to date. He can hear special lectures, attend operations in the hospitals, and participate in therapeutic and operative demonstrations in the clinics. The mornings are given up to practical instruction, at clinics and hospitals, while the afternoons are devoted to lectures on ordinary subjects and to live topics of the hour. These meetings, therefore, give the general practitioner, in a manner much more feasible than a postgraduate course, an opportunity to perfect his knowledge along any given line, without keeping him too long away from his practice. They are much more instructive than the ordinary medical congress, the program of which is necessarily restricted and has an interest only for a limited number of practitioners.

All branches of medicine, including the various specialties, afforded opportunities to the visiting physicians for instruction, and all hospitals continued to function as usual during the conference. It is therefore impossible to give anything like a complete account of the program, and mention will be made only of the principal subjects discussed before the members of the congress.

THE CAMPAIGN AGAINST CANCER

Bergonié discussed the activities in the campaign against cancer, in which he has participated for many years. He called attention to the establishment of campaign centers where the latest and best surgical equipment, together with radiotherapeutic apparatus capable of producing 200,000 volts, have been installed. These centers are also provided with a supply of radium, which for some tissues may reach 1 gm. These campaign centers are, at the same time, centers of investigation, where methods are perfected, technic is improved and efforts are made to elucidate the pathogenesis of cancer and the constitution of the tissues in which the cancer develops.

ILEOCOLIC STASIS

De Beule of Ghent discussed intestinal stasis. He defined the multiform phases of this affection clearly and explicitly, and outlined the main medical and surgical methods of treatment. The sole means of diagnosis is to take a series of roentgenograms at intervals during six to forty-eight hours after a test meal. De Beule asserted that colopexy is the surgical method of choice; resections do not give as good results and are therefore less frequently indicated. He emphasized especially the importance of roentgenography and collaboration between surgeons and roentgenographers.

INDIVIDUAL MENTAL AND PHYSICAL APTITUDES

Remy, a public health officer of Brussels, has studied the effects of individual aptitudes on intellectual and manual output. By the precise graphic methods employed in pedagogy and experimental psychology, he examined the aptitudes of each subject and thus determined the maximal producing power. From his researches he is convinced that aptitudes are inborn. They may be either mental or physical, and proper knowledge of the aptitudes of pupils would make it possible to direct them toward the choice of the profession, trade or occupation for which they are best adapted and thus assure maximal returns from their labor.

Numerous other papers, of noticeably practical importance, were read. All contributions and demonstrations were planned to familiarize one with the innovations and the improvements in the fields of surgery and therapeutics.

The Pathogenesis of Cancer

Before the Royal Society of Medical and Natural Sciences, M. Reding of Brussels recently presented some of the newer ideas concerning the pathogenesis of tumors. Radioactive bodies may, it is held by some, under certain circumstances become concentrated in a given tissue and through their constant irradiation bring about a malignant division of the cells.

Another problem of considerable interest is the study of the physicochemical modifications that take place in the tumor host. These changes have been studied from the standpoint of metallic ions by researches on electric resistances and the use of microchemical methods. Potassium, calcium, magnesium and sodium have been the principal subjects of inves-

tigation, the author having devoted himself particularly to the study of magnesium. He has studied also certain relations between cancer and diabetes, and finally the question of immunity, more particularly by inoculation or vaccination with tumors attenuated by radium or roentgen rays.

BUDAPEST

(From Our Regular Correspondent)

Aug. 2, 1923.

Damages for Negligent Treatment

Alexander Kerrich, an architect, has sued the Fasor Sanatorium for neglect in treatment. In his complaint he says that he was operated on successfully by Prof. Louis Adam, and left the sanatorium after one week; but he had to undergo after-treatment with deep roentgen-ray applications. After this was completed, he developed severe burns, which, according to Adam, were due to negligence in the application of the roentgen rays. When Kerrich attempted to continue his vocation, he found that he was unable to climb ladders; as he was a builder, this decreased his working capacity by at least 50 per cent. As the sanatorium is materially responsible for injuries caused by the negligence of its employees, he sued for damages of 160,000,000 crowns (equal to about $5,000). He reckoned that his least monthly earnings were $30, and now his working capacity is impaired by 50 per cent. At the time of the accident he was 37 years of age, and reckoning a work expectancy of twenty-eight years, his damage amounts to 160,000,000 crowns. The Budapest court decided against the sanatorium, arguing that, according to the medical evidence, at the time of the roentgen-ray application (end of last year) there existed reliable means for measuring the dosage. The sanatorium, having no such equipment, should not undertake deep penetration work, which needs exact measurement. The court reduced the sum asked by the architect to 80,000,000 crowns with costs.

Device for Manipulating Objects Under Microscope

A long felt want in microscopy is a device that enables the examiner to grasp and manipulate objects under the microscope. Tibor Peterfi has studied this question for many years and has succeeded in perfecting a device with the aid of which it is possible actually to grasp bacilli and even to cut them with fine platinum or glass needles; this renders possible various physical and chemical examinations. Peterfi's invention will unquestionably be appreciated all over the world, and he already has numerous applications from foreign instrument makers requesting licenses to manufacture the device, which was exhibited before the Medical Society of Budapest.

Professor Vamberg on the Exaggeration of Prices for Brain Work

The Budapest supreme court of judicature has rendered a decision to the effect that the law relating to usurious wages is applicable to physicians. Prof. Rustem Vamberg has declared, in connection with this decision, that the consequences cannot be estimated. If the conception of usurious wage is applicable to physicians, it will also apply to lawyers, writers, journalists and artists, and to all who do mental work. This would lead to the most impossible situations. Manifestly, mental work, in which the individuality of the worker is expressed, cannot be measured in terms of raw material and time expended. Many eminent jurists refrain from extending the conception of extortionate wage beyond manual labor. It should certainly not be extended to physicians who perform purely mental work. It might be urged that if the judge cannot estimate the value of mental work performed by a physician, this could properly be done by a medical expert. But this is nonsense, said Vamberg. Imagine the situation, for instance, if H. G. Wells claimed $100,000 for a novel and Mark Twain as expert said that the writer is exploiting the needs of the publisher. It would be just as foolish to say that the physician, who according to the patient, charges an extortionate fee, is exploiting the patient's need.

A Club of the Blind

Not long ago, a club was opened in Budapest in which all members and the staff are blind. It has a library comprising more than 2,000 works, billiard rooms and chess rooms. The members call themselves "fate-mates." The president, a woman, is an accomplished pianist, and has composed several popular songs. The chessmen are of regulation form, and are distinguished by touch. Chess matches are arranged to which the public is admitted, the proceeds of the price of admission being donated to the indigent blind. The members also use typewriters. The president has proved to your correspondent that the blind are capable of writing whole volumes without error. The club has more than 200 members, and secures work for them in offices, cinemas and cafés.

VIENNA

(From Our Regular Correspondent)

Aug. 6, 1923.

Prophylactic Centers Against Tuberculosis of Children

With the final dissolution of the British Help for the Famine Area in this country, a number of children and juveniles would have been left to the mercy of public charity. Therefore it was decided to make use of the excellent organization built up by the institution mentioned, and its work was taken up by a committee consisting of members of the former British Help Society, the municipal board of health and all other societies (Red Cross, Society of Friends, American Help) which had done so much relief work within the last five years. The new institute is the United Home and Foreign Help for Tuberculous Children. Its chief aim is the placement of (1) tuberculous children in special sanatoriums, and (2) of children threatened with infection in recreation homes where they may gain weight, strength and power of resistance. The minimum time of stay in one of these institutes is three months. In the first year (April, 1921-March, 1922), 1,638 children were thus housed; in the second year (April, 1922-March, 1923), 1,649. As the funds contributed by foreign societies have been used up, the Union of the Austrian Sickness Insurance Clubs (krankenkassen) decided to devote a sum of a thousand million kronen ($15,000) a quarter to continue the work. About 60 per cent. of the children cared for by these institutes were the offspring of wage earners, laborers, office clerks and commercial assistants. Some recreation homes for the children are situated in our Alpine districts, from 800 to 1,000 meters (from 2,500 to 3,000 feet) above sea level; some are on the German seacoast; others are in the Austrian forest districts. About 20 per cent. of the children can be sent by the Vienna Board of Health, which pays the cost for their care; about 75 per cent. are paid for by the government, and 5 per cent. pay their own costs. The medical supervision and examination is entrusted to municipal officers of health, assisted by qualified nurses. In Vienna there are three centers where the children are examined and registered; in the counties there is one center in each principal town. If a child is found affected, it is handed over to the Sanatorium Committee. With few exceptions, the sanatorium costs of the children are paid by one of the corporations mentioned above, and it is worthy of remark that state and municipality contribute liberally.

Results of Surgical Treatment of Tuberculosis of the Lungs

In a paper presented recently to the surgical society of this city, Dr. Denk reported from the Eiselsberg clinic on the

results in eighty-one cases from surgical intervention in pulmonary tuberculosis. Of these patients, twenty-nine were operated on by the paravertebral route, the remaining fifty-two by the usual costal route. Three patients died as a consequence of the operative procedure, and two died later from tuberculosis; three operations have been so recent that these cases cannot be considered. Dr. Denk has followed up and examined all the cases accessible, and found that 50 per cent. of the patients have obtained decided benefit, or have been cured, being free from bacilli and fit for work. Four patients received no benefit; the disease progressed and the other lung was affected some time after the operation. The operation consisted in opening the affected side, draining pleural effusions, and thoracoplasty. The method of filling the lung with iodoform or other disinfectant (like a dental filling), did not give favorable results. Of eleven patients treated in this way, two died soon after the operation, and four died later of tuberculosis; of the five surviving, three are not improved, and two are cured. Twenty-six patients were subjected to phrenicotomy. This operation did not arrest the progress of the disease; it can be recommended only as an adjuvant in thoracoplasty. If pneumothorax is aimed at, or if there are adhesions between the diaphragm and the lung (basal adhesions), the division of the nerve is followed by welcome temporary relief. Surgical methods are not yet sufficiently successful to justify their substitution for climatic and dietetic measures, but they offer useful help in tiding the patient over a critical period and rendering improvement by other factors more hopeful.

Correlations Between Metereologic Conditions and Mortality

For several years the relations between climatic variations and morbidity and mortality have received increasing attention on the part of pathologists and alienists, but heretofore without decided advance in real knowledge. In connection with these researches, it is interesting to note the views of a well-known pathologist of half a century ago, Prof. I. Engel of Vienna. In a paper read before the Pathologic Society of this city, Dr. Schrötter presented a diary of this scientist, wherein he found these shrewd observations: Under the date of July 25, 1873, he wrote:

"A constant stationary barometric pressure exerts a most beneficial influence on the life of the diseased and on the spirits and sense of pleasure of the healthy. The absolute degree of pressure is insignificant, but its constancy is important; then the number of deaths is minimal. Slow increase or drop of pressure produce no variations. Rapid changes of barometric pressure, even if the absolute differences are not great, cause a rise of mortality; healthy and diseased persons are excited and feel disagreeable sensations; melancholic attacks also are frequent. Rapid and considerable changes of pressure cause an increase of sudden deaths. The minds of persons are affected in a way that makes them act in a fashion they would otherwise abstain from. In these times the maximum of suicides occurs, both from excitement and from depression of the soul; apoplectic insults are relatively most frequent. The sexual desire among healthy people is strong in periods of falling pressure and weaker with a rising barometer.

"The atmospheric humidity plays an important part in many diseases; dropsy patients especially feel most disagreeable in periods of increased humidity; patients with edema—without exception—die most often in moist times. The simultaneous occurrence of several 'hydropic' deaths is a sure forerunner of an approaching period of rain. Phthisic patients, however, do not stand well the lack of moisture in the air. Their mortality reaches a maximum when the moisture is at a minimum. Barometric pressure and humidity of the air are among the most important factors of human welfare, both in healthy and in ill persons. In lunatic asylums one often observes a sudden change in the behavior of the inmates, always due to atmospheric conditions. Before a thunderstorm we all feel different; the mental equilibrium is affected and is restored after the storm. Our mind is under the inevitable influence of the body and is controlled by it rather than controlling the body."

BERLIN

(From Our Regular Correspondent)

Aug. 4, 1923.

Conflict of the Panel Physicians with the Health Insurance Societies

The constantly increasing economic distress has again brought about a conflict between the panel physicians and the health insurance societies over the subject of fees. As on previous occasions, the controversy arose not only on account of inadequate compensation but more particularly because of undue delay in the payment of fees, a combination of difficulties from which many physicians have suffered considerably. In Berlin, the results of such defective conditions are naturally felt more keenly than elsewhere, not only because, in the city, as a rule, the necessaries of life are harder to obtain, but also on account of the surplus of physicians such as is commonly found in the capital. In view of the fact that in the United States as well there has for some time been an agitation to introduce social health insurance, it will doubtless be of general interest if I describe with some detail the conditions that gave rise to the present conflict between physicians and the health insurance societies. In the contract that was drawn up for Greater Berlin in 1920, it is provided that the compensation to be given panel physicians shall be in the form of an annual capitation fee for each member of a health insurance society. Whereas, in the meantime, in almost all communities of the empire, payment has come to be made according to the actual amount of work performed, in Berlin the capitation fee method has been retained; and, owing to the many difficulties that the application of the new system to an organization comprising almost 3,500 physicians would entail, no very energetic attempt has been made to introduce in Berlin the method of compensating physicians according to the work performed. On the contrary, efforts here in Berlin have been concentrated for the most part on endeavors to bring the capitation fee up to an amount that would be commensurate with present economic conditions, but, unfortunately, with only partial success.

According to the new contract entered into March 1, 1921, the annual capitation fee per member was 30 marks. Three months later it was advanced to 40 marks, and in three months more to 50 marks. These advances, however, were brought about, not by discussion and pacific agreements between the health insurance societies and the panel physicians, but only through decisions of the court of arbitration, which both parties are under obligations to recognize. For the first quarter of 1922, the court of arbitration established 100 marks as the annual capitation fee, while, about the same time, the consultation fee laid down by the official Prussian schedule of fees was raised from 1 mark to 10 marks. By virtue of an agreement that was entered into in the second quarter between the health insurance societies and the physicians, certain extra compensation in addition to the capitation fee was allowed during the course of the year 1922. Only once (in the third quarter of 1922) did it prove possible to secure through the court of arbitration extra compensation, in addition to the capitation fee, equal in amount to that granted for Germany as a whole. For the fourth quarter, 1922, the court of arbitration refused to grant the demands made for extra compensation, so that, with the total number

of insured reaching almost 1,500,000, the loss in fees to the physicians amounted to around 70,000,000 marks.

The special agreement according to which extra compensation was to be granted physicians in keeping with the advances in the cost of living expired (as did also the agreement pertaining to Germany as a whole), Dec. 31, 1922, and was not renewed. In the first quarter of 1923, the court of arbitration had to be appealed to again for the adjustment of the fees. On this occasion, the physicians demanded approximately twelve times the amount of the minimal consultation fee (as established by the official Prussian schedule of fees) as the annual capitation fee. The physicians thought that, by this demand, they would secure a capitation fee that would put them on the same financial basis as their colleagues throughout the empire who were paid according to the work performed. The court of arbitration granted the Berlin physicians for the period from February 1-14 a capitation fee equal to ten times the amount of the minimal consultation fee, while for the period from February 15 to March 31 a capitation fee only nine times the amount of the consultation fee was accorded, so that they were thus receiving more than 25 per cent. less than their colleagues who were compensated according to the amount of work performed.

These constant struggles to secure an adequate increase of the capitation fee, together with the uncertainty of income, which is a natural accompaniment of the capitation fee system, have occasioned an ever increasing feeling of bitterness among Berlin physicians, which has found vent in their various assemblies. This bitterness was still further increased by the fact that, when fees due them were finally paid, the money received had depreciated perceptibly in value. The physicians therefore proposed that, in adjusting the capitation fee for the second quarter of 1923, the minimal consultation fee established for Prussia be no longer used, and demanded as a basis the capitation fee that existed just before the war, which was equal to 5 gold marks. When payment in paper money was made, they demanded that this sum (5 marks) be multiplied by the average *Teuerungsindex* (the index representing the percentage of increase in the cost of living over peace times), adjustment to be made at the beginning of each month for the ensuing month. They also demanded an extra compensation of 20 per cent. to reimburse them for the increased cost of professional equipment and general upkeep. The court of arbitration, which was again appealed to, did not accede to the demand that another method of adjusting the capitation fee be instituted, but continued to use the minimal consultation fee of the official Prussian fee schedule as a basis. A certain modification was allowed, but the gain was more ideal than material. The court of arbitration raised for its basic standard the minimal consultation fee of the Prussian fee schedule as established by the Prussian minister of welfare for April, May and June, and thus committed itself to the view that it did not regard the Prussian standard commensurate with the increased cost of living, an admission of inestimable importance. The court of arbitration raised the minimal consultation fee of the Prussian fee schedule from 925 marks to 1,000 marks for April, from 1,000 to 1,300 marks for May, and from 1,800 to 2,200 marks for June. In this instance, however, it ruled that *nine* should be taken as a multiplier in arriving at the amount of the annual capitation fee, in place of *twelve,* which the physicians had demanded. But, since it was provided in the decision of the arbitration court that, in case in June a further increase in the fee schedule should be made, the increased fee should be applied for the whole month; and since the Prussian minister of public welfare actually did increase the minimal fee from 1,800 marks to 3,600 marks for June, we received as a capitation fee 17,700 marks in place of 13,500 marks. With reference to the payment of the capitation fees, the health insurance societies were instructed by the arbitration court to make partial payments by the fifteenth of each month for the preceding month. In case of nonpayment, the usual interest on the delayed payments must be paid. Two weeks later, negotiations were begun with reference to the fees for the month of July. The demands of the physicians were the same as in the previous quarter; namely, the capitation fee of the prewar period multiplied by the ratio of the present increased cost of living to the cost during peace times, and an extra 20 per cent. for professional equipment and upkeep. On the basis of the cost of living at the close of the first week in July, the physicians ought to have received a capitation of 97,100 marks. The court of arbitration contented itself with establishing the capitation fee for the first half of July, again on the basis of an increase of the minimal fee of the Prussian fee schedule from 6,000 marks to 6,500 marks, and again using *nine* as a multiplier. This adjustment yielded a capitation fee of 58,500 marks. July 28, 1923, the arbitration court was to convene again, with reference to any advances in the cost of living, was to establish the capitation fee for the second half of July.

The medical profession decided that it could no longer keep silent in the face of the repeated rejection by the arbitration court of its demand for a change in the method of arriving at the amount of the capitation fee. In numerous protest or indignation meetings, the leaders were urged to cancel the contract at once, since, in view of the inadequate capitation fee, only a very small fraction of the physicians, overworked as they were, was interested in keeping it up. The leaders, however, again succeeded in preventing an immediate cancelation for an indefinite time. But if, by July 28, the physicians had not received satisfactory assurances from the health insurance societies, the executive committee was empowered by a resolution adopted at a special meeting of more than 1,500 panel physicians to cancel the contract on August 1.

Fortunately, no cancelation of the contract took place. That would have been unfortunate in every way, for there can be no doubt that the cancelation of the contract with the health insurance societies, and the consequent treatment of the members as private patients, would have lessened materially the income of the physicians. And since there would doubtless have been many physicians hard pressed financially, some, partly on account of the unendurable drop in their income and partly by reason of the lack of fraternal spirit or class consciousness, would soon have given up the fight, and the health insurance societies would soon have been in a position to provide, to a limited extent at least, medical care for their patients and would thus have been able to carry on the fight to the detriment of the panel physicians as a whole. There is little doubt that the sad experiences of the physicians during similar conflicts in prewar years would have been repeated under the present oppressive economic distress. Thus the leaders among the panel physicians, who carried on the negotiations under the chairmanship of representatives of the government, did not find it difficult to compromise on the following basis:

> The capitation fees from August 1 onward shall be determined in the following manner: They will be figured on the basis of 5 gold marks (the capitation fee during the prewar period), multiplied by the ratio of the present cost of living to the prewar cost, as determined weekly, according to the standard index adopted by the German empire, which is to include the cost of clothing. The health insurance societies shall pay the capitation fees weekly in advance. Furthermore, some time before August 1, a conference shall be held between the health insurance societies of Berlin and the medical association of Greater Berlin to decide in regard to the payment to the physicians of a special allowance for professional equipment and upkeep, in addition to the regular capitation fee.

Necrology

Prof. Max Wolff, bacteriologist, died, July 20, at the age of 79. He was first an assistant in the Medizinische Klinik

at Rostock; later served in the Chirurgische Klinik in the same city, and afterward became an assistant in the University Policlinic in Berlin, of which Prof. J. Meyer was then the director. In 1875 he became an instructor in the university. Among his earlier publications, his treatises on poisoning from mussels deserve mention. He did much research on actinomycosis, and later devoted himself chiefly to investigations on tuberculosis. His earlier work on tubercle bacilli was criticized by Robert Koch, but his studies on tuberculin were more valuable. In 1900 he was appointed director of the newly founded University Policlinic for the Tuberculous in Berlin, a position he retained until it was closed a few years ago.

Prof. A. Ellinger, director of the pharmacologic institute in Frankfort-on-the-Main, has died at the comparatively early age of 53. He was a pupil of Professor Jaffé in Königsberg, and was his assistant from 1897 to 1912. On the death of Jaffé, Ellinger succeeded him. In 1914 he removed to Frankfort, where he became director of the pharmacologic institute. His publications deal not only with pharmacology but also with physiologic chemistry. He was the author of numerous treatises on these subjects, and published a revision of Huppert's textbook on urinalysis.

The death of Assistant Professor Forschbach, director of the department of internal medicine in the Wenzel-Hancke Hospital in Breslau, at the age of 43, has been announced. Forschbach was a pupil of Minkowski, and had made contributions to the pathology and therapy of diseases of metabolism, more particularly diabetes.

Marriages

FRANKLIN C. MCLEAN to Miss Helen Vincent, both of Peking Union Medical College, Peking, China, July 2.

JOSEPH EHRLICH ROSENFELD, Detroit, to Miss Adelaide Seaman of Battle Creek, Mich., August 9.

MARVIN ARTHUR BOWERS, Winston Salem, N. C., to Miss Lettie Green of Thomasville, July 17.

CARROLL SPAULDING WRIGHT, Philadelphia, to Miss Helen C. Shaw of Ann Arbor, Mich., June 23.

HOWARD LULL VAN WINKLE to Miss Josephine Krause, both of Cedar Rapids, Iowa, June 29.

FRANK HAMER RUSSELL, New York, to Miss Charlotte McCoy of Cincinnati, August 1.

HAROLD TOWNSEND, Sac City, Iowa, to Miss Avo Dovbenmier of Cedar Rapids, May 18.

FRANK THEODORE HARTMAN to Mrs. Martha Pederson, both of Waterloo, Iowa, June 27.

IVAN RAY POWERS, Waterloo, Iowa, to Miss Dorothea Herman of Boone, June 27.

ANDREW C. HENSKE, St. Louis, to Miss Mary Jane Sinclair of Litchfield, Ill., June 26.

MARION A. WEIGHTMAN to Mr. Albert P. McKee, both of Toledo, Ohio, August 18.

ARTHUR LAWRENCE WASHBURN to Miss Sona de Got, both of New York, August 16.

JOSEPH EDWARD LEO to Miss Lucille J. McGuinn, both of Chicago, September 1.

CHARLES F. LITTLE, Vail, Iowa, to Miss Agnes Helen Reilly of Iowa City, June 9.

FRANK MILES KEEFE to Miss Geraldine Kelly, both of Clinton, Iowa, June 9.

CLYDE A. MEDLAR to Miss Louise Nagel, both of Verdon, Neb., June 7.

BRETISLAV B. SEDLACEK to Miss May Fixa, both of Omaha, June 20.

JOHN A. FLORA to Miss Beth Morris, both of Flora, Ind., June 29.

Deaths

Herbert Harlan ⊕ Baltimore; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1879; died of heart disease while playing golf, August 16. Dr. Harlan was born in Harford County, May 7, 1856; he was appointed assistant demonstrator of anatomy at his alma mater in 1880 and demonstrator in 1886. At the time of his death Dr. Harlan was chief-of-staff at the Presbyterian Eye, Ear and Throat Hospital, president of the state board of medical examiners, president of the Medical and Chirurgical Faculty of Maryland. He was ophthalmologist to the Western Maryland Railway, the Mount Hope Retreat, Maryland Cambridge Hospital, St. Joseph's Hospital and other institutions. In 1913 he was sent by the Secretary of the Interior to the mountain counties of Kentucky to investigate the cause of trachoma. Dr. Harlan was a member of the American Ophthalmological Society, the American Otological Society and the National Board of Medical Examiners.

Herman Truman Livingston Collyer, New York; Bellevue Hospital Medical College, New York, 1881; member of the Medical Sociey of the State of New York and the New York Obstetrical Society; treasurer of the New York Academy of Medicine, 1900-1905; formerly assistant gynecologist to the French Hospital; aged 66; died, August 13, in Bellevue Hospital, of cerebral hemorrhage.

Mary Almira Smith, St. Petersburg, Fla.; University of Zurich, Switzerland, 1880; member of the Massachusetts Medical Society; formerly attending surgeon to the New England Hospital for Women and Children and the Women's Memorial Hospital, Boston; aged 73; died, August 10, in Winthrop, Mass., of senility.

Robert Fleming Amyx ⊕ St. Louis; Marion Sims College of Medicine, St. Louis, 1897; on the staff of the Mullanphy Orphan Asylum and former assistant superintendent of the St. Louis City Hospital; member of the Association of Surgeons of St. Louis; aged 58; died, August 5, of cerebral hemorrhage.

Edward Everett Allen, Charleston, Mass.; Boston University School of Medicine, Boston, 1896; assistant professor of anatomy at his alma mater; on the staff of the Massachusetts Homeopathic Hospital, Boston; aged 55; was killed, August 13, when the car in which he was riding overturned.

Rawley Holland Powell ⊕ Fairmont, W. Va.; College of Physicians and Surgeons, Baltimore, 1892; served with the M. C., U. S. Army, during the World War with the rank of major; aged 54; superintendent of Fairmont Hospital No. 3, where he died, August 5, following a long illness.

Lewis Seaver Dixon, Boston; Medical School of Harvard University, Boston, 1871; member of the Massachusetts Medical Society and the New England Ophthalmological Society; for several years ophthalmologist to the Boston City Hospital; aged 77; died, August 5, of cerebral hemorrhage.

John Whiting Hargis, Pensacola, Fla.; Kentucky School of Medicine, Louisville, 1893; member of the Florida Medical Association; specialized in surgery; served in the M. C., U. S. Army, during the World War with the rank of major; aged 53; died suddenly, August 11.

Joseph H. Huntley, Lima, Ohio; Eclectic Medical College, Cincinnati, 1878; Starling Medical College, Columbus, Ohio, 1890; member of the Ohio State Medical Association; formerly consulting surgeon for the Lima Hospital; aged 72; died, August 10, of senility.

Edward Hamlin Hazen ⊕ Oakland, Calif.; Charity Hospital Medical College, Cleveland, 1866; veteran of the Civil War; for forty years a practitioner in Iowa; formerly instructor at Drake University College of Medicine, Des Moines; aged 89; died, August 3, of senility.

Edward Elder Austin ⊕ Minneapolis; University of Michigan Homeopathic Medical School, Ann Arbor, 1884; formerly professor of gynecology at the University of Minnesota Medical School, Minneapolis; gynecologist to the City Hospital; aged 69; died, August 9.

Jonah Clifford Cadwallader ⊕ Norwood, Ohio; Medical College of Ohio, Cincinnati, 1891; for fifteen years city health officer; on the staff of the Bethesda Hospital, Cincinnati; aged 57; died, August 14, of cerebral hemorrhage, while on his vacation, at Sault Ste. Marie, Mich.

⊕ Indicates "Fellow" of the American Medical Association.

Griffith Holme Maghee, Aguilar, Colo.; Northwestern University Medical School, Chicago, 1908; served in the M. C., U. S. Army, during the World War with the rank of major; aged 51; died, August 9, from a bullet wound, presumably self-inflicted.

Charles E. Cole, Prairie Du Chien, Wis.; Iowa Eclectic Medical College Medical Department of Drake University, Des Moines, Iowa, 1893; member of the State Medical Society of Wisconsin; aged 65; died, August 5, in Chicago, following an operation.

Joseph Williams McCall, Huntington, Tenn.; University of Nashville Medical Department, 1857; College of Physicians and Surgeons of Columbia University, New York, 1869; veteran of the Civil War; aged 91; died, August 2, of cerebral hemorrhage.

Jacob A. J. Martin, Yankton, S. D.; Indiana Medical College, Indianapolis, 1875; University of Illinois College of Medicine, Chicago, 1885; formerly a practitioner of Iowa, and a member of the legislature of South Dakota; aged 79; died, August 10.

Almon Tanner Godfrey ✠ Holland, Mich.; Northwestern University Medical School, Chicago, 1904; professor of chemistry at Hope College; aged 46; died, August 21, at the Holland Hospital, of peritonitis following an appendectomy.

Aldéric Lesage, Pointe Claire, Que., Canada; Laval University Faculty of Medicine, Quebec, 1897; formerly mayor of Pointe Claire and president of the board of school examiners; aged 49; died recently, following a long illness.

Hiram Dewey Peterson ✠ Sandusky, Ohio; Jefferson Medical College of Philadelphia, 1899; chief of staff, Providence Hospital, Sandusky; aged 47; died suddenly, August 19, at his summer home in Cedar Point, of angina pectoris.

Chauncey Frank Cotteral, Guthrie, Okla.; Medical College of Ohio, Cincinnati, 1883; member of the Oklahoma State Medical Association; aged 63; Logan County physician at the time of his death, August 10.

Martin William Brian, Hillsboro, Texas; Memphis Hospital Medical College, Memphis, Texas, 1890; member of the State Medical Association of Texas; aged 66; shot himself, August 9, while suffering from ill health.

Andrew Todd McClintock ✠ Wilkes-Barre, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1911; specialist in internal medicine; aged 38; died, August 4, following an operation for colitis.

Victor Francis Ryan, Escanaba, Mich.; Detroit College of Medicine and Surgery, 1916; served with the M. C., U. S. Army, in France during the World War; aged 29; died, May 24, of acute endocarditis.

Frederick A. Nelson, Omaha; Creighton University College of Medicine, Omaha, 1904; also a pharmacist; aged 54; died, August 6, from injuries received in an explosion of chemicals in his pharmacy.

Thomas W. Green, Chelsea, Mass.; Boston University School of Medicine, Boston, 1891; aged 60; died suddenly, August 8, at his summer home in Limerick, Me., of cerebral hemorrage.

Leon B. Stratton, Pasa Robles, Calif.; Saginaw Valley Medical College, Saginaw, Mich., 1899; aged 47; died, August 7, at the St. Francis Hospital, San Francisco, of lobar pneumonia.

Ella D. Goff, Bellevue, Pa.; Boston University School of Medicine, Boston, 1891; for eighteen years treasurer of the Homeopathic Medical Society of Pennsylvania; aged 55; died, August 3.

Henry Timm, Brooklyn; Long Island College Hospital, Brooklyn, 1880; on the staffs of the Lenox Hill and the Long Island College hospitals; aged 71; died, August 12, of heart disease.

Allyn Claude Magee ✠ Los Angeles; College of Physicians and Surgeons, Los Angeles, 1908; served during the World War; aged 46; died suddenly, August 14, of edema of the lung.

Charles Wesley Turner ✠ Harrisburg, Ill.; St. Louis College of Physicians and Surgeons, 1898; formerly mayor of the city; aged 52; died suddenly, August 19, of heart disease.

Philip B. Riggins, Los Angeles; University of Southern California College of Medicine, Los Angeles, 1907; aged 40; died suddenly, August 14, of heart disease.

Belle Voorhees Aldridge, Shoreham, N. Y.; Women's Medical College of Pennsylvania, Philadelphia, 1886; aged 65; died, August 6, at Elmira, of carcinoma.

Leopold J. Fogel ✠ Cincinnati; Medical College of Ohio, Cincinnati, 1874; formerly on the staff of the Avandale Hospital; aged 72; died suddenly, August 16.

Harvey J. Terpening, Fulton, N. Y.; Eclectic College of Cincinnati, 1895; member of the Medical Society of the State of New York; aged 55; died, August 9.

L. B. Boggs, Oklahoma City (years of practice); served as a member of the Nebraska state legislature in 1878; aged 95; died, July 29, of senility.

George W. Richards, Island Ford, Va.; Medical College of Virginia, Richmond, 1857; Confederate veteran; aged 96; died, August 3, of senility.

William A. Iles, Urbana, Kan.; University Medical College of Kansas City, Mo., 1890; veteran of the Civil War; aged 80; died, August 5, of senility.

J. H. Dunham, Rivesville, W. Va. (licensed, West Virginia, 1881); aged 89; died, August 3, at the home of his son in Fairmont, of senility.

Wirt Adam Fullington, Oklahoma City; Fort Worth (Texas) School of Medicine, 1902; aged 57; died, July 31, of chronic nephritis.

Abraham Joseph Saylin ✠ Los Angeles; College of Physicians and Surgeons, Los Angeles, 1915; aged 40; died, August 5, of heart disease.

George P. Mehl, Oklahoma City; Fort Worth School of Medicine, Fort Worth, Texas, 1898; aged 58; died, August 16, of heart disease.

Isaac Friedman, Chicago; Bennett Medical College, Chicago, 1895; member of the Illinois State Medical Society; aged 65; died, August 20.

Arthur B. Holland ✠ Wellsville, Ohio; Long Island Hospital College, Brooklyn, 1891; aged 59; died, August 6, of heart disease.

Elbert Tripp Rulison, Sr., Sacramento, Calif.; Albany (N. Y.) Medical College, 1875; aged 71; died, August 10, of heart disease.

John Ferguson Thomson, Garrett, Ind.; University of Michigan Medical School, Ann Arbor, 1875; aged 73; died, July 25, of senility.

Jacob Andrew Keck, Richmond, Va.; Medical College of Virginia, Richmond, 1895; aged 48; died, July 26, following a long illness.

William Russell McIntyre, Troy Grove, Ill.; University of Illinois College of Medicine, Chicago, 1909; aged 45; died, August 12.

John Dennard Keaton, Dallas, Texas; Atlanta (Ga.) Medical College, 1855; veteran of the Civil War; aged 89; died, August 1.

Vene Duane Farmer, Jackson, Mich.; University of Michigan Medical School, Ann Arbor, 1905; aged 41; died, August 5.

Thomas C. Alexander, Oakland, Iowa (licensed, Iowa, 1887); veteran of the Civil War; aged 84; died, June 2, of senility.

T. A. Harvey, Prattsville, Ark.; Louisville (Ky.) Medical College, 1876; aged 84; died suddenly, August 1, of heart disease.

Orlando B. Surface, Indianapolis (licensed, Indiana, 1903); aged 77; died, August 11, at the Methodist Hospital, of senility.

George Alfred Barrall, Allentown, Pa.; Jefferson Medical College of Philadelphia, 1882; aged 66; died, August 18.

James W. Puckett, Atlanta, Ga.; Southern Medical College, Atlanta, 1902; aged 47; died, August 2, of influenza.

John Findley, Caldwell, Ohio; Miami Medical College, Cincinnati, 1876; aged 77; died, August 6, of senility.

James Lincoln More ✠ Pulaski, N. Y.; New York University Medical College, 1887; aged 63; died recently.

Charles D. Roome, Cresco, Iowa; Rush Medical College, 1871; aged 79; died, May 31, of senility.

Correction.—Dr. William Hunter Steele, Rockingham, N. C., whose obituary notice was published in THE JOURNAL, August 18, p. 594, is not dead. It was W. L. Steele, D.D.S., who died in Rockingham, July 24.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

EL ZAIR

Quackery's Latest Offer of an Elixir of Life

The student of quackery is led to wonder whether the dealer in alleged remedial agents can concoct a story too preposterous for the public to believe. A study of the exploitation of the nostrum "El Zair" convinces one that no claims are too absurd to coax the dollars from those who seek "rejuvenation."

The public is being circularized by El Zair, Inc., which gives its American address as "American Laboratories, 43 West 16th Street, New York City." Certain verbal peculiarities of the "literature" give internal evidence of an English origin. The magnificent abandon with which the probabilities are discarded and the almost unbelievable absurdity of the claims marks the material as of trans-Atlantic birth. According to a certificate filed March, 1923, the El Zair concern was incorporated under the New York state laws with an authorized capital of $1,000 consisting of ten shares, each having a par value of $100; of this $500 was paid in. The names of the officers and directors of the company are: Carl F. Doscher, President; Ralph Van Buren, Treasurer; A. V. Skinner, Secretary.

The El Zair Company occupies the same quarters as those used by the "Thompson-Barlow Co.," the "Thompson Feature Service," the "Modern Research Society," the "Corrective Eating Society," etc. Especially does the concern seem to be closely affiliated with the Thompson-Barlow Co. which has for its president one R. S. Thompson, who also is president of the "Corrective Eating Society" (see reproduction of typical advertisement) said to have been founded by Eugene Christian, the food faddist. From this office comes forth such stuff as "Little Lessons in Corrective Eating" by Eugene Christian, "Weight Control" by the same author, "Subconscious Power—the Secret of Achievement" by one Legaren, "The Secret of Sound Sleep," the "Vaco Reducing Cup" and various other pieces of pseudo-scientific buncombe.

The El Zair advertising approach consists in (1) a typewritten letter of three pages signed "J. E. Bartlett," (2) a reprint of what purports to be an article by the late W. T. Stead from the English *Review of Reviews* for March, 1911, and (3) a "Reservation Card for Introductory El Zair Treatment" with an addressed envelope to simplify the parting of the fool from his money. The letter from Bartlett states that there are thousands who "have personal reasons to believe that the long-sought Elixir of Youth has at last been found." Anticipating, evidently, that the reader may be skeptical, Mr. Bartlett points out that, although man has been trying to fly from the time of Icarus and his famous wax-attached wings, successful aviation is a recent triumph, and that while for centuries men have "tried to find new methods of broadcasting their messages" not until today has science learned the secret of the radio.

"Older than all of these is the search for the Elixir of Youth. Have these centuries after centuries of research, thought and tireless endeavor at last enabled modern Science to discover this Elixir?"

And Mr. Bartlett answers his own question by declaring that the elixir *has* been found—and is available in the form of "El Zair." The discovery of El Zair seems a matter of controversy, for, as the reader of this article will find, the history of El Zairian quackery is not consistent. According to Bartlett, El Zair's discovery was due to the untiring investigations of "an English scientist of considerable note" one Professor James Dean Morgan, who is said to have been collaborating "with the famous Metchnikoff" at the "University of Bonn." In passing, it may be said that there seems to be no evidence that Metchnikoff ever did research work at Bonn.

The Elixir of Life
by W. T. Stead
INTRODUCTION
Science's Story of El Zair
El Zair Comes to America
A New Kind of Health and Vigor
SPONGINGS AFTER EACH EL ZAIR TREATMENT SHOW HOW DANGEROUS WASTE IS WITHDRAWN

Some pages from the advertising booklet sent out by the El Zair concern. While this purports to contain a reprint of an article by W. T. Stead, comparison with the original shows modifications, deletions and additions.

"Like Metchnikoff he was trying to pick up the lost threads dropped by the ancient alchemists and medieval philosophers."

Professor Morgan—still according to Bartlett—finally discovered his elixir and returned to England. There he "found a member of his family, Mrs. Frances Campbell, very seriously ill." He immediately sent back to Bonn for "a quantity of his new formula" with the result that Mrs. Campbell not only regained her health but her youth and, to quote the lady, "In an incredibly short space of time I had all the world crying out to me to give it to them at any price."

ENLISTING THE REVIEW OF REVIEWS

Enter Mr. Stead. The famous founder of the *Review of Reviews* was known by those who followed that remarkable man's career, as a journalist of unswerving loyalty to what

he considered the truth. His sincerity of purpose was exceeded only by his appalling lack of judgment on all things medical and some spiritual. Mr. Stead will long be remembered for the courageous fight he made against the vicious traffic that he brought to the attention of his countrymen in his series "The Maiden Tribute of Modern Babylon." Yet, this champion of political, economic and social justice unwittingly played into the hands of medical fakers. Uncritically, he lent aid and comfort to the cancer quack, Count Mattei, and his preposterous "Blue Electricity" and he did his readers a lamentable disservice when he took up cudgels in behalf of Quack Macaura and his fakish "Tulsocon." Mr. Stead's gullibility in the matter of nostrums and quackery and certain phases of spiritualism was a trait that was as astonishing as it was grievous to his admirers.

A miniature reproduction of El Zair letterhead.

In 1911, in the March issue of the English *Review of Reviews* Mr. Stead had an article entitled "The Elixir of Life." It dealt with El Zair, the subject of the present article. The present exploiters of El Zair send out as part of their advertising paraphernalia what purports to be a reprint of this article. (See miniature reproduction with this article.) Comparing it with the original, however, one finds many significant omissions and some additions. These will be discussed later. Recurring again to the Bartlett letter we are told that Mr. Stead had published an article on El Zair and had suggested that the price of the treatment should be set at £100 (about $500). This is a falsehood; Mr. Stead made no such suggestion. The Bartlett letter states further that Mr. Stead was so impressed with the marvelous possibilities in El Zair that he "sailed on the Titanic to offer to America the benefits of its truly astonishing results." The destruction of that ill-fated ship and the resultant death of Mr. Stead is said to have "delayed El Zair's coming to America, a delay that was further prolonged by the chaotic conditions resulting from the World War. But:

". . . even these tragic delays had their elements of good fortune; for during this intervening time large deposits were discovered of the ingredients which had made 'EL ZAIR' so costly. And as a result 'EL ZAIR' has come to America at a cost so moderate that anyone sincerely anxious to derive its benefits can readily afford it."

The reference in the quotation just given to the discovery of "large deposits" of the "ingredients" of El Zair will be appreciated by the reader when he learns the result of the analysis of this "Elixir of Youth." The claim that Mr. Stead's visit to the United States was to offer El Zair to America is another flight of fancy. The real reason for his visit was to address a meeting in New York on the subject "The World Peace" and to take part in the "Men and Religion Forward Movement."

The Bartlett letter closes with the statement that the action of "El Zair" is "to withdraw from the pores and the tissues of the skin the calcareous and other waste matter which results in premature old age, and in the many diseases which are forerunners of it." El Zair is applied externally with a sponge and is "guaranteed harmless." The price of a full treatment is $6.00, but Mr. Bartlett encloses a "Reservation Card" for an "Introductory Treatment" for $2.00.

GARBLING MR. STEAD'S STORY

The second piece of advertising already briefly referred to purports to be a reprint of the article by W. T. Stead in the English *Review of Reviews* of March, 1911. The reprint has an introduction by Vance Thompson who abandons for the nonce the writing of popular pseudo-science for the task, doubtless equally profitable, of embellishing nostrum literature. *Facilis descensus Averni.*

A careful comparison of the original article with the reprint now being sent out shows a number of minor changes, the omission of several paragraphs and the addition of material that did not appear. The El Zair concern quotes the article with fair accuracy up to the point at which Mr. Stead discussed the composition of the Elixir of Life. Mr. Stead's story was to the effect that El Zair was a re-discovery; it had originally been discovered centuries ago in Arabia and an Arabic manuscript which came into the hands of a friend of Mr. Stead "contained the formula for El Zair, together with full and explicit directions as to where it could be found and how it should be used." Not a word did Mr. Stead have to say about the "noted" English scientist, "Professor James Dean Morgan." Parenthetically, a thorough search of all available biographical data, American, British and European, has failed to disclose any reference to this noted man!

THE MYSTIC HERBS OF EL ZAIR

After mentioning the incident of the Arabic manuscript, Mr. Stead wrote:

"The ingredients could only be procured in certain lofty and almost inaccessible mountain ranges in Africa. The secret as to the precise habitat of the herbs—for El Zair is the product of certain herbs gathered under certain phases of the moon, and compounded with certain mystical rites—was known only to the Grand Vizier of a barbarous potentate."

The paragraph just quoted from the original article in the March, 1911, issue of the *Review of Reviews* is entirely omitted from the reprint now being sent out. So, too, is a subsequent paragraph describing the perilous and hair-raising adventures of Mr. Stead's friend in quest of the Elixir. The sum and substance of it was that the lady in question finally obtained some of these mystic herbs, brought them to England and thus made available the raw material for El Zair.

TONED DOWN FOR AMERICAN CONSUMPTION

Nor is this the only omission from Mr. Stead's original article. In describing some of the marvelous results alleged to have been produced by El Zair when it was being experimented with, Mr. Stead detailed the case of a septuagenarian, who was as bald as a billiard ball. He used El Zair and, presto! "the bald patch was covered with a plentiful thatch of hair." Possibly the advertising man in charge of the present El Zair campaign in the United States decided that this yarn was a little too strong for American consumption and felt that he was justified in omitting it.

DIRECTIONS
FOR GENERAL USE
POUR contents immediately into one pint of water and allow to dissolve. Sponge vigorously into skin with circular motion. Do not rinse sponge with El Zair—just squeeze it. For specific directions for both general and local use see directions herewith.
FOR EXTERNAL USE ONLY
EL ZAIR
The scientific Elixir for external application used by men and women of prominence both in America and abroad. A general physical Rubifacient, and for local inorganic disorders caused by the accumulation of calcareous and other waste matter which are the forerunners of premature old age and senility.
EL ZAIR, Inc.
41 West 16th St., New York City

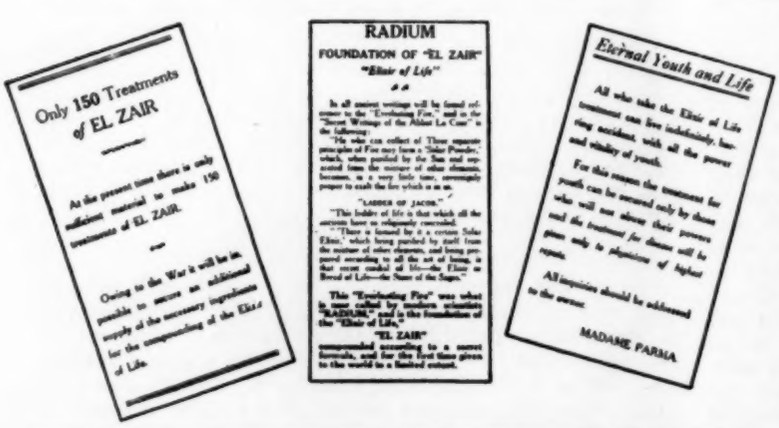
Photographic reproduction (reduced) of an "El Zair" label.

Another case described by Mr. Stead was that of the "noble lady, who had long since given up all hope of presenting her lord with an heir." She took El Zair and "became a happy mother in less than a year." This incident, too, the present exploiters of El Zair omit, possibly in the belief that to ascribe such potency as this to El Zair might hurt its sale among the Jurgens—and Mrs. Jurgens—in quest of youth.

But the present exploiters of El Zair make up for their deletions from Mr. Stead's article by putting in several paragraphs that do not appear at all in the original. They tell of "an unfortunate gentleman whose doctors had given him over to death, promising at the uttermost another year's existence." The case of the doomed man in the closing stages of pulmonary tuberculosis is described in detail. But the dying consumptive refused to die. He took El Zair for six weeks and became "to all intents and purposes a cured man." They tell, too, the story of a "distinguished novelist" who was

"mentally and physically tired out"; he took El Zair and it "made a new man of him." A "member of a great ducal family who, although only sixty-five, was "deserted by the vital forces," was also rejuvenated with El Zair. And there are others.

As a matter of fact, one who reads the original article on "El Zair" is convinced that Mr. Stead himself was under no misapprehension on the subject. The reason for the article was very evidently to give Mr. Stead an opportunity to discuss, as he did, the ethical problem that would be involved in the discovery of a preparation that could make persons live indefinitely. Stead reveled in hypothetical discussions of this kind and no man could write them better. Although more than half of Stead's original article dealt with this phase, the present exploiters of "El Zair" have left out all reference to it. As indicative of what Stead thought of the matter, are these sentences following his description of "El Zair" and prefacing his theoretical discussion of elixirs of life: "Supposing that this incredible story is not a page out of the Arabian Nights but is a solid, serious, scientific fact and that there is at present living in London a fellow creature who is in possession of this momentous secret. What then?"



Some of the advertising of "El Zair" sent out in 1914. At that time "Madame Parma" was the exploiter and the claim was made that the foundation of El Zair was radium.

Following the garbled reprint, the advertising booklet contains "A Few of the Remarkable Letters Attesting the Merits of El Zair." These testimonials are practically all British and from the aristocracy or the nobility. The "follow-up" literature, however, contains testimonials from mere commoners in the United States. Gullibility knows no caste.

There is one from Lord R———, another from Lady H———, still another from His Royal Highness, Maharajah of ———, and one from Renee of S———; then there is one each from Lady A. C———, Lady C———, Lady A———, Lady V——— and the Secretary to Lady G———. Some of the testimonials are frankly signed. One is ascribed to Count de Lambert, another to Lady Islington while there are puffs credited to the Countess of Warwick, Lord Redesdale and Sir Charles Hawtrey.

Irresistibly we are reminded of Gilbert's delightful satire, "The Gondoliers," in which the "celebrated, cultivated, underrated" Duke and Duchess of Plaza-Toro describe in tuneful verse how men and women of noble rank may find congenial —and remunerative—employment:

"I write letters blatant, on medicines patent,
"And use any other you mustn't;
"And vow my complexion, derives is perfection,
"From somebody's soap — which it doesn't!"

Thus sang the duchess, summing up the matter, with the duke, in a duet:

"In short, if you'd kindle, the spark of a swindle,
"Lure simpletons into your clutches;
"Or hoodwink a debtor, you cannot do better
"Than trot out a Duke or a Duchess."

And the El Zair concern trots them out. The booklet closes with "Science's Story of El Zair" and describes how "El Zair Comes to America." The "Reservation Card" for the "Trial Introductory Treatment" offers enough El Zair for two weeks' treatment for $2.00.

ADVERTISING EL ZAIR IN 1915

Before giving the chemists' report on this preparation, mention should be made of a little past history of El Zair advertising. In the latter part of 1914 El Zair was being exploited from New York City apparently to an exclusive and limited clientele, men of wealth and, in many cases, position. At that time a reprint of the *Review of Reviews* article was sent out but without the omissions to be found in the present advertising matter. In addition there was a booklet containing matter alleged to have been "freely translated from the Arabic" and purporting to give "The Rationale of El Zair."

The owner of El Zair at that time was "Madame Parma," the Savoy Hotel, London. At the time the Madame was in New York and those who desired to secure "The Elixir of Life" (not "The Elixir of *Youth*" as now) were told to address Madame Parma's secretary, Miss Mary Thiell, at 112 West 72d Street, New York City. In addition to the two booklets there were a number of advertising leaflets (some are reproduced in miniature with this article) describing the alleged virtues of El Zair. One of these leaflets declared that radium was the foundation of El Zair; another gave a list of "Diseases Already Cured by El Zair." But the nub of the 1915 advertising campaign was the statement that, owing to the war, it was impossible to secure an additional supply of the necessary ingredients for compounding El Zair and that at that time there was "only sufficient material to make one hundred and fifty treatments of El Zair." Finally, it was declared that the owner had "decided to give El Zair to the world through the agency of reputable physicians."

Evidently the attempt made eight years ago to market this preposterous nostrum at a high price to wealthy gulls and through the agency of physicians, failed and nothing more was heard of El Zair until its present exploitation.

Before closing this part of the narrative, it should be said that after Stead's first article in the March, 1911, English *Review of Reviews* there was an editorial on El Zair in the May, 1911, issue. It was there stated that "the lady who rode over the mountains of North Africa in order to gather the mystic herbs from which the Elixir is brewed" was charging one hundred pounds sterling for the stuff. Evidently English quacks are no pikers. Then Mr. Stead had a final announcement in the issue of December, 1911, stating that the woman who had the wonderful herbs from which El Zair was made, wished to be known as "Mrs. Merlin." Mr. Stead stated further that, according to the Arabic manuscript in Mrs. Merlin's possession:

"He who would use El Zair must take it internally and apply it externally with undeviating regularity. If he shrinks from the regular performance of the necessary rites let him pass by—El Zair is not for him."

It should be borne in mind, then, that the original El Zair was an infusion of herbs and was to be taken internally and used externally. These facts are interesting when compared with the present exploitation.

A TREATMENT IS ORDERED

In order to tell a palpitating world of what El Zair is composed a "treatment" was purchased. (See label reproduced in miniature.) The check sent in payment was returned in due time through the usual banking channels, and was found

to have been endorsed: "El Zair, Inc. Pay to the order of Garfield National Bank, Advertised Products, Inc." Just what relationship there is between the Garfield National Bank and this piece of quackery, we do not know.

Before the specimen arrived there came another typewritten letter from J. E. Bartlett expressing thanks for the order, stating that the treatment was being sent and giving instructions in the use of the Elixir of Youth. The purchaser was told to dissolve the powdered El Zair in water and sponge the body daily with the solution. He was urged to squeeze out the sponge after the treatment and save the spongings in separate bottles. The letter declared that "the spongings would gradually get darker until they sometimes become almost black." This is the "deeper seated waste matter" which El Zair removes and which, according to El Zairian theories, is the cause of old age and its infirmities. With the letter there was an advertising circular whose verbiage followed closely the tenets of mail-order quackery. Part of the material is the report of an alleged "Clinical Test" said to have been "conducted by Eustace H. Gane, chemist, 1063 Sterling Place, Brooklyn." Mr. Gane's name is already familiar to readers of the Propaganda department as the author of a puff for a fake "obesity cure" put out by one R. Lincoln Graham of New York City. Possibly time will teach Mr. Gane that selling his services to quacks does not redound either to the credit of his profession or to his own reputation.

10 *Physical Culture*

New Stomachs for Old In 48 Hours

By R. S. Thompson

THOUSANDS of people who suffered for years with all sorts of stomach troubles are walking around to-day with entirely re-made stomachs—stomachs which have been re-made in from 48 to 72 hours! They enjoy their meals and never have a thought of indigestion, constipation, or any of the serious illnesses which so often result from defective and ailing stomachs.

Christian's suggestions as to food, his new attention was rather a necessity, for had formerly been in the habit of taking large daily doses of a strong cathartic. In five weeks every abnormal symptom had gone, and—he weighed having increased 6 lbs. In addition to this, he acquired a store of physical and mental energy equal to some gladness with his former self as to almost take the line that it was the same man.

little course of lessons which tells you exactly what to eat for health, strength, and efficiency. This course is published by The Corrective Eating Society of New York.

How You Can Try This Method Without Risking a Penny

Much could be written about the cause and the remedy for stomach ills, but as Eugene Christian's methods, like that of The Corrective Eating Society, are based entirely on Nature's laws, for you are sure that there is no danger of your health suffering

Christian's Discovery Now Available for All

Correct Eating for Success

CORRECTIVE EATING SOCIETY

Photographic reproduction (greatly reduced) of a full page advertisement from *Physical Culture* of the "Corrective Eating Society." This concern does business from the same address as the El Zair Company. Notice that this advertisement is attributed to R. S. Thompson, president of the "Corrective Eating Society," of the Thompson-Barlow Company, etc.

The specimen of El Zair finally arrived and was turned over to the A. M. A. Chemical Laboratory. The laboratory report follows:

LABORATORY REPORT

One original bottle of "El Zair" manufactured by "El Zair, Inc., 43 West 16th St., New York City," was submitted to the Chemical Laboratory for examination. El Zair consisted of a lumpy white substance, which was in a moist state. It had a strong, pungent odor of acetic acid; also an aromatic odor resembling oil of bergamot; when dissolved in water the acetic acid odor was not so pronounced. The product was evidently impure as some straw and dirt was easily detectable. Nonvolatile organic matter was absent. When the mixture was treated with alcohol and filtered, on evaporation the filtrate left no residue. When a specimen of the substance was dried for two hours at from 200 to 210 C., the loss in weight was 53.3 per cent. Qualitative tests indicated the absence of all heavy metals; also absence of calcium, barium and strontium; magnesium, a trace of sodium and sulphate were present. Quantitative determination yielded the following:

Acetic acid (calculated as absolute)	27.60 per cent.
Magnesium (Mg^{++})	8.41 per cent.
Sulphate (SO_4^{--})	33.92 per cent.

This is equivalent to approximately 42 per cent. of magnesium sulphate, calculated as anhydrous and 28 per cent. glacial acetic acid. (The magnesium sulphate of commerce varies much in its water of crystallization; if pure, it contains 7 molecules which weighs about twice as much as the anhydrous.) Essentially, the product may be considered to consist of 1 part glacial acetic acid to 3 parts of magnesium sulphate, U. S. P. (Epsom salt) perfumed with oil of bergamot. According to the directions, the contents of the bottle are to be added to a pint of water. An essentially similar solution can be made by dissolving 2½ ounces of Epsom salt in a pint of distilled vinegar (containing about 5 per cent. acetic acid).

THE ELIXIR OF LIFE—EPSOM SALT AND VINEGAR

Here, then, we have the new Elixir of Life, handed down from the old Arabians and obtained with much toil and travail by an intrepid English woman who rode over the mountains of North Africa in order to gather its mystic ingredients—Epsom salt and vinegar. Here we have, to quote from the enterprising Mr. Bartlett, the results of "centuries after centuries of research, thought and tireless endeavor"—Epsom salt and vinegar. Here stands the crowning achievement of the English scientist of note who, like Metchnikoff tried "to pick up the lost threads dropped by the ancient alchemists and medieval philosophers"—Epsom salt and vinegar. Here is the marvelous combination that brought back to life a dying consumptive, that grew hair on the bald thatch of a septuagenarian, that cured a crippled American millionaire of a tuberculous knee joint, that permitted a "noble lady who had long since given up all hope of presenting her lord with an heir" to become a "happy mother"; that made a new man of a mentally and physically tired out distinguished novelist; that rejuvenated a "member of a great ducal family"; that called forth paeans of praise from Lord Redesdale, the Countess of Warwick and Sir Charles Hawtrey—Epsom salt and vinegar.

The exploiters of "El Zair" charge $6.00 for six weeks' treatment. For those who are willing to forego the thrill of reading the El Zair literature but still wish to be rejuvenated, to grow hair on bald heads, to cure tuberculous joints, or to become happy mothers, we suggest that the same results can be obtained by purchasing half a pound of commercial Epsom salt and a quart of "white" vinegar.

Correspondence

THE PHYSICIANS' HOME ASSOCIATION

To the Editor:—While traveling this summer I met a number of physicians, with whom I discussed the necessity or desirability of one or more homes for physicians who are without any financial means and too old or disabled to help themselves. Most physicians are not aware that such an institution already exists in the state of New York, and that four physicians are being cared for. As a member of auxiliary committees of various medical societies, I had occasion for many years to come in contact with men who, for some reason or other, had lost everything and were without finances and without a home. Some, but very few, were not deserving of any support. Others were men of high character of whose integrity there was no doubt. Often I was at a loss how to help and what to do, when the small allotted pecuniary help that medical societies can afford came to a stop. In one short period there were five or six men in the wards of several hospitals in Manhattan—in the public wards. At about the same time two others died; after close inquiry I was convinced that they took their own lives. One of these men had been president of a national medical society, and neither left sufficient funds to defray funeral expenses.

When these facts were mentioned to a small coterie of physicians and I proposed starting a home, the idea was enthusiastically received. The result is that today there is such a home in the state of New York, whose doors are open to all practitioners (male or female) of the United States. The aim of the incorporated society is to admit physicians who are either without means and who are unable

to support themselves, or for such physicians as are in a position to pay the cost of their maintenance either in part or in full. Lack of funds prevents the society from advertising the institution thoroughly, but it is growing steadily, though slowly. An estate with 186 acres of land with buildings has been donated to the society and is now being used. It is located at Caneadea, several hundred miles from the city of New York. This place is not only too far from the city to be practical, but also to receive personal management, which is always most essential.

Meanwhile, the House of Delegates of the American Medical Association, at the San Francisco session, endorsed this movement, and assistance may be expected not only from the Association itself, but also from its individual members. I am convinced that it will be supported very largely, once it has come to the notice of the many thousand readers of THE JOURNAL. In fact, I cannot see how any physician can ethically "stay out of it."

While in Illinois, Nebraska, Colorado and other states I was asked whether different states should not erect such homes, and whether they should not independently form new societies for this purpose, I would say that for many reasons it would be better to have a central society branching in different parts of the Union. For example, an inmate always prefers to live near his relatives or friends; another one may require the climate of California or of Colorado. To some men the name "Physicians' Home" was objectionable. "Osler Home" was suggested. Still others preferred the name "Sanatorium." Would the family or patients or friends like to perpetuate a colleague's name by a large contribution and have the home named after him? The views and opinions on these and other questions are invited. What I would ask of my colleagues is to think this matter over. Soon they will be convinced that not only one home but more such homes is the urgent need in the United States. It will require work —hard work—to accomplish this; for "nil sine magno vita labore dedit mortalibus." In other words: we mortals (especially we physicians) do not achieve anything without hard labor.

WOLFF FREUDENTHAL, M.D., New York.

IRRITATION FROM MICROSCOPE EYEPIECE

To the Editor:—From personal experience, I wish to warn both the microscope user and the microscope manufacturer of the danger of the projecting corrugated rim of the ordinary microscopic eyepiece as an agent for producing an epithelioma in the region of the orbit. This applies especially to the binocular microscope, in which it is almost impossible to look through the microscope without scraping a piece of nasal epithelium with the eyepiece. Can any other procedure, if repeated day after day for year after year, be any more favorable for the production of an epithelioma on the side of the nose?

WILLIAM F. ALLEN, PH.D., Portland, Ore.
Professor of Anatomy, University of Oregon Medical School.

INSULIN-LIKE SUBSTANCE FROM PLANTS

To the Editor:—I was much interested in the editorial "Progress With Insulin" (THE JOURNAL, August 4, p. 397). I found an insulin-like substance in yeasts (*Saccharomyces ellipsoideus* and *cerevisiae*) and in some green corn stalks, and reported my findings in a general way to the Dallas County Medical Society. A record of the report will be found in the *Dallas Medical Journal* (**5**:54) and *Texas State Journal of Medicine* (**19**:53). I also mentioned the fact that I had noted an insulin-like substance in plant material, while discussing another's paper, before the last meeting of the Texas State Medical Association, held on May 8-10, in Fort Worth. Most of my work up to date has been done on rabbits, a few dogs and cats, and two human beings.

LEWIS WILLIAM FETZER, M.D., Dallas, Texas.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

TREATMENT OF MYOPIA

To the Editor:—Kindly enlighten me on the following points:

1. Given: A girl 8 years old, oversized for her age, muscular, and apparently in perfect health; food, sleeping, exercise, fresh air all carefully supervised; taught at home, her studies occupying about three hours daily. In the course of a routine examination it was discovered that she was myopic to the extent of 2 diopters, there being practically no astigmatism. Visual acuity, measured at 20 feet, was about 6/10. Spherical lenses were ordered to be worn constantly, except possibly for near work. Now, in such a case, with no eye symptoms, whatever, is it a known fact, or is it merely assumed, that wearing such glasses will prevent the further development of the myopia? If the glasses do prevent the development of the myopia somewhat, it must be because they relieve the eye from a certain "strain," and that brings up the next question.

2. In such a mild degree of myopia, with good near vision, in what way does a slight blurring of distant objects impose a strain on the eyes? When gazing at distant objects the eyes are practically at rest, and corrective accommodation of the ciliary muscle would consist merely of further relaxation. In mild hyperopia I fully understand the slight constant strain in near vision, and with myopia and wide-apart eyes I appreciate the strain accompanying excessive convergence; but where is the strain in the given case of mild myopia? I shall be glad if you can make physiology and clinical practice agree, and, if possible, indicate the prognosis in case the glasses were not worn.

E. M. EWING, M.D., Napoleonville, La.

ANSWER.—1. The question of preventing the development of myopia in an individual case cannot be answered easily. Myopia is not a congenital condition of the eyes, but occurs most frequently among those who use their eyes for much near work because of the excessive accommodation and convergence. Children of near sighted parents are not always near sighted, but show a greater tendency to become near sighted than do children whose parents have normal sight. The emmetropic eye is the ideal eye, and to lessen strain all eyes should be made emmetropic by lenses. For many years it has been the practice of the leading ophthalmologists in this country and in Europe to correct myopia fully under complete cycloplegia. As Duane says, "The full and early correction of myopia tends to check the progress of the process."

2. The myope does not see well in the distance, and makes an effort to do so by compressing the lids over the globe to shorten the anteroposterior diameter. In this act there is a tendency to strain the already weakened sclera and choroid. Myopia which had already progressed to 2 diopters at this patient's age, if not corrected, would in all probability increase if the eyes were used in the ordinary way, and more rapidly if used under unfavorable circumstances. Risley has shown that strain due to astigmatism in predisposed children tends to produce myopia. It is therefore of great importance to correct any measurable degree of astigmatism in all cases of myopia.

TUBERCULIN AS A DIAGNOSTIC AGENT—SIGNIFICANCE OF POSITIVE INTRADERMAL TUBERCULIN TEST

To the Editor:—1. Please give the present status of tuberculin as a diagnostic agent. 2. What infections or conditions, aside from tuberculosis, may be responsible for a positive reaction in the intradermal test?

INQUIRER.

ANSWER.—1. A positive intradermal tuberculin test is believed to be an antigen reaction in the presence of defense agencies or antibodies, induced by the primary contact of the body with the tubercle bacillus or its toxins. This reaction begins with the formation of tubercles or tuberculous tissue or soon thereafter, and only after the formation of tubercle or tuberculous tissue can the skin reaction become positive. A positive skin reaction in a suspected individual, however, does not give us any clue if the tuberculous process is just

forming, just beginning, or if the process is progressing or retrogressing, if arrested or latent. The application of tuberculin in suspected tuberculous involvement of tissues and organs other than the lungs is also followed by systemic disturbances and to signs pointing to these various organs, but with an absence of pulmonary symptoms. It is in this sense that phthisiotherapeutists consider old tuberculin of much importance and valuable as a diagnostic agent.

2. It is admitted that intradermal reaction may follow after injections of other proteins than the tuberculins. Observations have been made along the line of serum therapy, and horse serum injections have repeatedly been followed by a condition known as anaphylactic shock. In some individuals the parenteral use of a foreign protein is followed by more or less severe reaction, and such persons are the possessors of a peculiar condition called idiosyncrasy, a hypersensitized skin; and many outside factors may be responsible for bringing about the oversensitive skin condition. Besides horse serum we find that milk, casein, albuminous products derived from various foodstuffs, and many other body foreign proteins, even nonprotein bodies, may bring about similar conditions; and individuals so sensitized may react positively when tuberculin is given intradermally. For instance, tuberculously infected or diseased individuals who previously have been treated with horse serum or milk products may react most vigorously to the intradermal tuberculin test. Likewise tuberculosis-free individuals previously sensitized to horse serum, casein, etc., will react vigorously to an intradermal dose of tuberculin. Occasionally, patients sensitized to horse serum will bring about a dermal reaction at the point of a previously applied test, and usually patients with negative intradermal findings are also negative to foreign proteins. The whole process seems to be one of hypersensitization of the body cells by the different proteins as well as nonprotein bodies. It should be mentioned here that the seasons seem to influence this hypersensitiveness of the skin.

INJUNCTION TO PREVENT PRACTICE

TO THE EDITOR:—Kindly give me what information you can on the following case: A clinic was organized for group practice in connection with a hospital about four years ago. One of the physicians connected with the clinic was paid a high salary, and contracted not to practice privately in the city for five years in case he should sever his connections with the group. After three years he resigned, and demanded a written consent to practice in the same city with a competing group. This was refused, and he left the community for one year and now wishes to return to practice with an opposing group. If a contract of this kind is not binding, it is manifestly impossible to conduct group practice in a small city. An attorney advises an injunction to prevent him from practicing until the contract period has expired. What is your opinion?

SUBSCRIBER.

ANSWER.—A court of equity will ordinarily enjoin a physician from practicing medicine in a given place and for a given time in violation of a valid contract to refrain from such practice. Such a contract is not valid if the time or place within which the physician agrees not to practice are greater than necessary to protect the other contracting party or in any other manner contrary to public policy as tending unnecessarily to reduce competition. No hard and fast limits of time and place can be fixed, but each case is determined on its own merits. A contract, to be enforceable, must be in every other respect valid, and a party before seeking an injunction should make sure that by some breach or waiver on his part he has not lost his rights under it. Of course, the contracting parties will be guided by counsel in any legal action.

CADAVERIC RIGIDITY—RIGOR MORTIS

To the Editor:—Can you inform me of the cause of cadaveric rigidity —rigor mortis?

INQUIRER.

ANSWER.—Two chief doctrines have been supported: one that rigor is not essentially different from ordinary muscular contraction except in degree, and perhaps due to a loss of inhibition to contraction. The other looks on it as a coagulation similar to the coagulation of the blood; and this idea, it may be said, has had the most general acceptance. Muscle contains a protein, myosinogen, which is readily coagulated, and it seems probable that rigor mortis depends on coagulation of this protein under the influence of acid formed in the muscle. When the blood supply is cut off in the muscle tissue there is a rapid rise in its acidity, apparently from increase of lactic acid, which is formed abundantly under asphyxial conditions. Meigs has advanced the idea that it is the swelling of the muscle colloids under the influence of the acid, and there is much to be said in favor of this view. The dependence of rigor on acidity is shown by the fact that it is possible to produce rigor in the muscles of living animals by perfusing a limb with a slightly acid salt solution, and the hardness of a limb from which the blood supply has been shut off by thrombosis or embolism, and also much of the cramplike pain, is probably due to rigor mortis in the muscles caused by acid formation under conditions of suboxidation. The occurrence of rigor mortis, even post mortem, does not necessarily mean that the muscle is dead, for if the part is transfused with a salt solution the rigor may be removed, and the muscle will then be found to react to stimuli. This indicates that the chemical changes of rigor mortis are not very profound.

(A more complete discussion will be found in Wells: Chemical Pathology, Ed. 4, 1920, p. 392.)

VITAMIN IN MILK

To the Editor.—What is the status of milk as a food in regard to vitamin content before and after pasteurization and also after boiling for two or three minutes? We have been recommending raw milk boiled for two or three minutes for our infants, but have met considerable opposition from one of the large dairies, which is pasteurizing all its milk. To its credit, it may be said that this dairy has the cleanest milk in town without going through the pasteurizing process. It claims less loss of vitamins by this process than through the boiling. We are trying to get this dairy to furnish certified milk. Are we on the right track or not?

HUGH W. REYNOLDS, M.D., Hibbing, Minn.

ANSWER.—Experimental studies have shown that when milk is permitted to stand for twenty-four or more hours after pasteurization its antiscorbutic value is much below that of fresh raw milk; consequently, the relation of the time of pasteurization to the hour of feeding is important.

Proper pasteurization destroys most organisms which are not spore bearers. Fortunately, this includes a majority of the ordinary pathogenic bacteria. The disadvantages of inadequate pasteurization or poor handling afterward are apparent in that such milk does not sour readily, owing to the destruction of most of the lactic acid forming organisms, and therefore gives the user a false sense of security. Experiments have further shown that boiling the milk a short time before using affects the antiscorbutic content far less than pasteurization followed by aging and oxidation.

Hygienic handling of milk is absolutely essential to proper infant feeding, as no degree of heat will destroy the toxic bodies contained in the milk. When any doubt exists as to improper exposure of milk, even though collected under the best of conditions, the method of choice is boiling in the home.

ALTITUDE AND HEARING

To the Editor:—Does altitude affect the hearing? I am partially deaf because of catarrh of the middle ear, and also have laryngitis; I have had the tonsils removed; I hear a noise, similar to that made by the katydid, in the left ear all the time, and occasionally in the right ear; I hear a distant noise, as of a band; I was never hard of hearing until coming to Coffeyville, seven months ago. The altitude here is 500 feet. I shall be glad to make a change if you think I should be benefited. Would too high an altitude, such as that of Arizona, Wyoming or Colorado, be injurious? I am 30 years old. The noise is almost unbearable, and whatever suggestions you make will surely be appreciated.

MRS. J. F. KELLER, Coffeyville, Kan.

ANSWER.—Altitude affects the hearing only in cases in which a condition of constriction of the eustachian tube exists, and then only temporarily. No permanent harmful results are produced. The type of ear trouble which develops in early middle life and associated with severe subjective head noises is not likely to be influenced appreciably by changes in altitude.

REMOVAL OF EMBEDDED COAL DUST

TO THE EDITOR:—Please advise me whether there is any known successful method of removing coal that has been embedded in the skin. In the coal regions this condition is often encountered as a result of premature explosion while mining coal.

HARRY H. BOLTON, JR., M.D., Pierce, W. Va.

ANSWER.—There is no successful way of removing from the skin old carbon stains such as those produced by coal dust. When the wounds have just been made, a great deal can be done by mechanical methods—washing and picking out the material, if possible. In the fresh cases also, Hutchins of Atlanta has recommended applying over the fresh wounds a layer of sterile adhesive plaster, under which serous exudate takes place which removes much of the material.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, September 4. Sec., Dr. Harry C. De Vighne, Juneau.

ARIZONA: Phoenix, October 2-3. Sec., Dr. W. O. Sweek, 404 Heard Bldg., Phoenix.

FLORIDA: Tallahassee, October 9-10. Sec., Dr. W. M. Rowlett, Tampa.

GEORGIA: Atlanta, October 9-11. Sec., Dr. C. T. Nolan, Marietta.

IDAHO: Boise, October 2. Dir. Mr. Chas. Laurenson, Boise.

ILLINOIS: Chicago, October 9-11. Supt. Mr. V. C. Michels, Springfield.

KANSAS: Topeka, October 9. Sec., Dr. Albert S. Ross, Sabetha.

MASSACHUSETTS: Boston, September 11-13. Sec., Dr. Charles E. Prior, Room 144, State House, Boston.

MICHIGAN: Lansing, October 9. Sec., Dr. Beverly D. Harison, 707 Stroh Bldg., Detroit.

MINNESOTA: Minneapolis, October 2-4. Sec., Dr. Thomas S. McDavitt, 539 Lowry Bldg., St. Paul.

MONTANA: Helena, October 2. Sec., Dr. S. A. Cooney, 205 Power Bldg., Helena.

NEW HAMPSHIRE: Concord, September 13-14. Sec., Dr. Charles Duncan, Concord.

NEW JERSEY: Trenton, October 16-17. Sec., Dr. Alexander MacAlister, State House, Trenton.

NEW MEXICO: Santa Fe, October 8-9. Sec., Dr. W. T. Joyner, Roswell.

NEW YORK: New York, Albany, Syracuse, Buffalo, September 24. Sec., Dr. William D. Cutter, Albany.

PORTO RICO: San Juan, October 2. Sec., Dr. Jorge del Toro, 1 Olimpe St., San Juan.

Louisiana June Examination

Dr. Roy B. Harrison, secretary, Louisiana Board of Medical Examiners, reports the written examination held at New Orleans, June 7-9, 1923. The examination covered 12 subjects and included 100 questions. An average of 75 per cent. was required to pass. Fifty candidates were examined, all of whom passed. Five candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
University of Arkansas		(1915)	86.8
Northwestern University Medical School		(1923)	88.6
Tulane University	(1902) 78.7, (1920) 88.9, (1921) 75, (1922, 3) 88.2, 90.1, 91.7, (1923, 41) 84.1, 84.5, 85.6, 86.2, 86.3, 86.7, 86.7, 86.8, 87.2, 87.7, 87.8, 87.9, 88, 88.2, 88.3, 88.6, 88.9, 89, 89.6, 89.8, 89.9, 89.9, 90, 90.2, 90.4, 90.4, 90.6, 90.6, 90.9, 90.9, 90.9, 90.9, 91.2, 91.3, 91.4, 91.5, 91.6, 91.9, 91.9, 92.1, 92.2		
Meharry Medical College		(1923)	83.8

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Atlanta Medical College		(1916)	Georgia
University of Georgia		(1906)	Georgia
College of Physicians and Surgeons, Baltimore		(1895)	Texas
St. Louis University School of Medicine		(1908)	Illinois
John A. Creighton Medical College		(1906)	Nebraska

Minnesota June Examination

Dr. Thomas S. McDavitt, secretary, Minnesota State Board of Medical Examiners, reports the oral, written and practical examination held at Minneapolis, June 5-7, 1923. The examination covered 15 subjects and included 80 questions. An average of 75 per cent. was required to pass. Forty candidates were examined, all of whom passed. Eight candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Rush Medical College		(1923)	85.5
University of Illinois		(1923)	92.2
Harvard University		(1921)	89.1
Tufts College Medical School		(1921)	83
University of Minnesota	(1922) 89.7, (1923, 31), 84, 84.6, 85.8, 86.9, 87, 87.9, 88.5, 89.3, 89.4, 89.5, 89.8, 90, 90.4, 90.5, 91, 91, 91.1, 91.1, 91.2, 91.3, 91.4, 91.4, 92.2, 92.3, 92.4, 92.5, 93, 93, 93.1, 94.8, 94.8		
University of Pennsylvania		(1920)	89.7
McGill University		(1919)	90
University of Moscow, Russia		(1919)*	84.3
University of St. Vlademira, Kief, Russia		(1913)*	82

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of California		(1921)	California
State University of Iowa Coll. of Med.		(1922)	Iowa
University of Kansas School of Medicine		(1921)	Kansas
University of Michigan Medical School		(1921)	Michigan
St. Louis University School of Medicine		(1922)	Missouri
Columbia University		(1892)	Washington
University of Pennsylvania		(1920) (1921)	N. Carolina

* Graduation not verified.

Book Notices

THE SPECTROSCOPE AND ITS USES IN GENERAL ANALYTICAL CHEMISTRY. By T. Thorne Baker, A.M.I.E.E., F.R.P.S. Second edition. Cloth. Price, $3. Pp. 208, with 98 illustrations. New York: William Wood & Co. 1923.

"The object with which this book has been written," says the author, "is to fill a want which has hitherto been felt by the student of an intermediate textbook which will connect the ordinary treatises on general physics with the modern advanced works on the spectroscope. The spectroscope or the spectrograph today finds an application in a very large number of industrial processes. Remarkable progress has been made in extending the field of spectrography, or photography of the spectrum, largely rendered possible by the recent progress in the manufacture of photographic plates for scientific purposes. The spectroscope may now be made to yield, in skilled hands, quantitative results where formerly its use was more especially qualitative." The book is clear and concise, although the discussions are necessarily technical. Only one of the ten chapters is of interest to the medical worker, and this only to the specialist in roentgen-ray spectra and analysis with roentgen rays. There is no mention of any kind of the spectral examinations of the blood, which might prove of some moment to the worker in medical laboratories. The subject matter is such that it does not lend itself to brief review, owing to its technical character. This work should prove extremely valuable to the scientific worker and to the advanced student in chemistry who wishes to ground himself in the principles of spectroscopic examinations and to learn something of the possibilities of research work along these lines.

ANOMALE KINDER. Von Dr. L. Scholz. Dritte, Umgearbeitete Auflage von Prof. Dr. Adalbert Gregor, Direktor der Fürsorgeerziehungsanstalt Flehingen in Baden. Paper. Price, 72 gold marks. Pp. 312. Berlin: S. Karger, 1922.

This practical monograph covers the large field lying between what may be termed normal mental state in childhood and the extremes represented by different pathologic types of individuality. Secondary characteristics as influenced by heredity, disease and environment are discussed from a philosophic point of view. A practical chapter on feeblemindedness in five sections covers the hereditary and postnatal types; their recognition during the first year of life; the examination of these children; their intelligence and their possibilities. Individual chapters are devoted to nervousness, hysteria and epilepsy. A very complete chapter is devoted to the psychopathic child. The disturbances of puberty and dementia praecox are also covered in detail. The pathologic basis is emphasized in a chapter devoted to suicide. A very extensive chapter on treatment and welfare measures covers these subjects from a general standpoint as well as the physical care and educational possibilities. Attention is directed to sexual perversion as influencing the prognosis and the relation of these children to society.

HAEMATOLOGY IN GENERAL PRACTICE. By A. Knyvett Gordon, M.B., B.C., B.A.. Medical Superintendent of the Virol Pathological Research Laboratories. Cloth. Price, $1.75, net. Pp. 100, with 5 illustrations. New York: William Wood & Co., 1923.

This is intended as a guide to the general practitioner who is anxious to utilize the light which a rough examination of a stained blood-film may throw on the diagnosis and prognosis of certain diseases. As the author points out, the busy practitioner rarely examines the blood himself, but sends the specimen to a laboratory for diagnosis. This is often unnecessary, as a little time spent by the physician may enable him to arrive at his conclusions at the bedside, and thus facilitate his treatment of the case. The work is divided into sixteen chapters, three of which cover the general scope of hematology, equipment and technic, while the others are devoted to a general discussion of the cellular elements of the blood and the changes found in blood diseases and, also, the influences of certain general conditions on the blood findings. While the discussion of the technic is necessarily limited to the simplest procedures, for the general worker

they will be found to cover his needs. The subject matter is sufficiently complete to enable one to understand and interpret the findings of the very simple technic outlined.

OPTOTYPES CONSISTING OF TEST-LETTERS AND PICTOGRAPHS FOR MEASURING THE ACUTENESS OF VISION. By John Green, M.D., LL.D., Professor of Ophthalmology in St. Louis Medical College, and A. E. Ewing, A.M., M.D., Professor Emeritus of Ophthalmology in Washington University. Paper. Pp. 24, with 35 engraved plates. St. Louis: C. V. Mosby Company, 1923.

This description, with the accompanying optotypes, is the outcome of work started by Dr. Green in 1886, when he had printed the original optotypes of this series for private distribution. The demand for these truly scientific charts was so great that Dr. Ewing compiled and elaborated the original charts, and made them available. Accompanying the charts is a booklet giving the history of the development of vision charts and the mathematical calculations on which these charts have been established. Both the charts and the booklet are in a handy form, and are a welcome addition to the armentarium of the ophthalmologist of precision.

HANDBUCH DER GESAMTEN TUBERKULOSE-THERAPIE. Herausgegeben von Prof. Dr. med. Ernst Loewenstein. Volume 1, Parts 1 and 2. Paper. Price, 40 marks, 5 pfennigs. Pp. 1044, with 62 illustrations. Berlin: Urban & Schwarzenberg, 1923.

This book represents an exhaustive consideration of the field of tuberculosis therapy. It has been planned to furnish to the practicing physician in collected form as much as possible of what is known concerning all aspects of the therapy of tuberculosis. While some features of the book will be of value chiefly to physicians of central Europe, the American may learn much by contrast with our own conditions. Most of the aspects of tuberculosis treatment are, of course, the same everywhere, and hence there will be much of value for all in a modern compilation such as this. Space does not permit comment on all the individual contributions. We note particularly the only one of the sections by an American, that on American tuberculosis clinics and welfare work by Walsh of Philadelphia. He takes as the origin of these successful institutions the clinic founded in 1891 by Flick in Philadelphia, out of which grew the Phipps Institute, which has served so well as an inspiration and a model to other American centers. The indebtedness of Flick and others to the pioneer clinic of Calmette in Lille is recognized, a debt which was perhaps repaid to France by the extensive American aid in tuberculosis welfare work during the war. We wonder whether our tuberculosis experts thought to breathe an inspiring "Calmette, we are here," when they began their campaign in and about Paris. This volume presents the usual virtues and defects of German works of its class. The individual sections are written by men competent in their field, and familiar with the central European literature and point of view, but with little else. As with all cooperative handbooks, there is a lack of continuity and coordination, and there is repetition. For example, it is difficult to understand why thirty-eight pages are given to a contribution on the pathology of tuberculosis of the vascular system in a work on the treatment of tuberculosis. Again, some contributors give bibliographies, while others do not give any references whatever. The illustrations are few, some good, but some altogether valueless, e. g., many of those in the article by Gassul on light therapy.

THE VASO-MOTOR SYSTEM. By Sir William M. Bayliss, M.A., D.Sc., LL.D., Professor of General Physiology in University College, London. Cloth. Price, $2.50, net. Pp. 159, with 67 illustrations. New York: Longmans, Green & Co., 1923.

To the average student of medicine, the term vasomotor system conveys ideas that are more or less vague. To one desiring more exact information, this monograph will be extremely helpful in explaining the obscurities of the complicated actions by which blood vessels undergo changes in diameter. There are discussed the structure of the vessels, the vasomotor nerves, vasomotor reflexes, the capillaries, veins, chemical action on arterioles, hemorrhage and shock. The acknowledged position of the author as a learned teacher, writer and investigator assures one of an authoritative and scientific treatment of the subject.

Medicolegal

Violation of Narcotic Law by Physician

(Manning v. United States (U. S.), 287 Fed. R. 800)

The United States Circuit Court of Appeals, Eighth Circuit, says that defendant Manning was convicted on five counts of an indictment charging him with aiding and abetting the violation of Section 2 of the Harrison Narcotic Law. Each count charged in substance that on a date specified the defendant, a registered physician practicing in St. Louis, did unlawfully, fraudulently and wilfully aid and abet the sale of certain narcotic drugs by one Eckert to the person named —not in pursuance of a written order from such person on a form issued in blank for that purpose by the commissioner of internal revenue—in the manner following: That the defendant did then and there issue a written order purporting to be a prescription to the person named for a certain quantity of narcotic drugs, which so-called prescription was not issued by the defendant in the course of his professional practice only, or for the treatment of any disease from which the person was suffering, or for the purpose of effecting a cure of the drug habit to which the person was addicted, but that the prescription was issued by the defendant for the purpose of gratifying the appetite of the person, who was a habitual user of narcotic drugs, in order that the person might continue their customary use, and with the intent that any registered druggist in the city of St. Louis, whose custom and practice it was to fill such so-called prescriptions for narcotic drugs, for addicts, might supply these drugs to the person named in the prescription, and that the so-called prescription constituted and was only a subterfuge for the purpose of consummating an unlawful sale of narcotic drugs under the guise of lawfully dispensing the drugs by a registered dealer to a consumer under and in pursuance of a written prescription issued by a physician registered under the act.

Each count in the indictment also alleged that Eckert was engaged in the drug business in the city of St. Louis, and had duly registered and paid the special tax required by the narcotic law; that, on the date of the so-called prescription, he wilfully and unlawfully sold and dispensed the drugs specified to the person named therein not in pursuance of a written order from the person on a form issued in blank for that purpose by the commissioner of internal revenue, but that he, Eckert, knowing the fraudulent purpose of the so-called prescription, and that the person named therein was addicted to the use of drugs as a habit, used the so-called prescription, as the defendant intended he should do, to cloak the unlawful sale and to make it appear to be a proper and legitimate dispensing of the drugs by a dealer to a consumer under and in pursuance of a written prescription issued by a physician registered under the act of Congress.

On behalf of the defendant it was argued that the indictment failed to charge the commission of any offense defined in any law of the United States. What revenue measure did the offense as charged affect? How did it interfere with the government keeping tab on all drugs that Eckert sold or Manning prescribed? The defendant was not charged with making any sale or of dispensing any drugs or with failure to keep a copy or record of the prescriptions that he issued. The druggist was not charged with failing to keep on file the prescriptions on which the drugs were sold. The pretended offense did not prevent or endanger the federal government in any way from the exercise of its just and lawful rights and powers reserved to it under the constitution.

However, the questions presented as to the constitutionality of the act and of the construction of Section 2 necessary to sustain this indictment have been settled by decisions of the Supreme Court of the United States; and it would seem that both the defendant and the druggist would be guilty under the act if the facts alleged in the counts of the indictment were true. Without stopping to state the evidence, the court of appeals is of the opinion that the good faith of the defen-

dant is issuing the prescriptions alleged in the indictment, and the good faith of Eckert, the druggist, in filling them, were rightly submitted to the jury. But the judgment of the lower court is reversed with directions to grant a new trial, on account of error in permitting inquiries to be made on the cross-examination of the defendant with regard to alleged misdemeanors of fifteen or twenty years previously in unlawfully writing prescriptions for intoxicating liquors.

Must Be Able to Distinguish Sources of Knowledge

(Acree v. North et al. (Neb.), 192 N. W. R. 947)

The Supreme Court of Nebraska, in affirming a judgment in favor of the plaintiff for damages for injuries sustained to his face and jaw from an alleged assault by the defendants, says that he called as a witness the physician who had treated him for the injuries, and asked the physician to describe the injuries, which he did, and among other things stated that the plaintiff had sustained a fracture of the jaw. On cross-examination, the physician was asked whether, on a prior occasion, he had not treated the plaintiff for facial paralysis; and, on stating that he had, he was asked in a series of questions to state the condition of the plaintiff's facial paralysis at that time; what effect it had on the muscular movements of the jaw or face, and what, if any, difference he observed in the condition of the face and jaw at his prior treatment and now. Objections to these questions were sustained on the ground of improper cross-examination and privilege.

The defendants, than calling the physician as a witness in their own behalf, asked him whether or not he had seen the plaintiff at different places on the street prior to the treatment of his present injuries; and, answering that he had, the physician was asked: "Will you state whether or not there was any difference in the appearance of his jaw at the time you treated him on the 7th and in the time that you had seen him on the street prior to that?" The plaintiff objected to any answer to this, for the reason that the relation of physician and patient existed and any communication or information obtained by the physician in the treatment would be privileged, which objection was sustained. This ruling seemed to be regarded by the defendants as a serious error and from it was sought to be raised the legal inquiry: How far may a physician be permitted to testify as to the physical condition or appearance of one from facts gained in a nonprofessional capacity whom he has before treated for the same or like conditions in a professional capacity?

The court is of the opinion that on the state of the record that inquiry was not properly reached. The witness had not been properly qualified, and the question put to him was premature; so, if but for that reason alone, the objection was properly sustained. The physician at no time stated, nor at any time was he asked to state, whether or not he could give the information required of him by the question based solely on his knowledge of the plaintiff derived unprofessionally, to the entire exclusion of knowledge derived professionally. This was essential to his competence to testify at all. Suppose he had been asked whether or not he could entirely separate and distinguish these two sources of knowledge, and he had answered that he could not; that would have disqualified him for further inquiry. He was not asked to make this discrimination, and at no time was it intimated to him that he must do so in order to render his answer to the question a proper one. Under these circumstances, the witness was left at perfect liberty to draw to the fullest extent on his experience, knowledge and information gained while treating the plaintiff as a patient, and impress it on any answer he might make. This the witness could not be permitted to do.

In other words, the court holds that the physician would not be permitted to testify, over the objection of the plaintiff that it would be a violation of the privilege existing between the physician and the patient, what the difference was, if any, in the appearance of the plaintiff's jaw and face at the time he treated him for his injuries from the assault and the time he had seen him on the street, at least until, if at all, it was first shown that the witness was able to and would separate and discriminate the knowledge and information gained in his professional capacity from that gained in a nonprofessional capacity and base his answer solely on the latter.

Examinations Not Medical or Surgical Attention

(Fidelity & Casualty Co. of New York v. Cross (Miss.), 95 So. R. 611)

The Supreme Court of Mississippi, Division B, in affirming a judgment in favor of plaintiff Cross on a permanent disability policy, holds that a question in an application for insurance which calls for a disclosure of the medical or surgical attention previously received by the applicant does not require an applicant to disclose the fact of previous medical examinations which showed that he was in good health at the time such examinations were made, as such examinations do not come within the meaning of the term "medical or surgical attention received" as used in the application. The court says that the undisputed evidence in this case showed that one examination was a periodic routine examination which the plaintiff was required to undergo in consequence of a position that he held, and another examination was an examination for life insurance; but, since the result of each of these examinations disclosed the fact that the plaintiff was in good health and physically sound, neither of them came within the meaning of the term "medical or surgical attention received" as used in the application. Consequently, the question in this application which called for a disclosure of the medical or surgical attention which the applicant had received during the previous seven years did not require him to list either of these examinations.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Washington, D. C., Oct. 15-20. Dr. Luther C. Peter, 1529 Spruce St., Philadelphia, Secretary.

American Association of Obstetricians, Gynecologists, and Abdominal Surgeons, Philadelphia, Sept. 19-21. Dr. James E. Davis, 111 Josephine Avenue, Detroit, Secretary.

American Association of Railway Surgeons, Chicago, Oct. 17-19. Dr. L. J. Mitchell, 29 E. Madison St., Chicago, Secretary.

American Child Hygiene Association, Detroit, Oct. 15-17. Dr. Philip Van Ingen, 125 East 71st St., New York, Secretary.

American Electrotherapeutic Association, Atlantic City, Sept. 18-21. Dr. Richard Kovacs, 223 E. 68th Street, New York, Secretary.

American Public Health Association, Boston, Oct. 8-11. Mr. A. W. Hedrich, 370 Seventh Avenue, New York, Secretary.

American Roentgen Ray Society, Chicago, Sept. 18-23. Dr. W. W. Watkins, Goodrich Building, Phoenix, Ariz., Secretary.

Association of Military Surgeons of the United States, Carlisle Barracks, Pa., Oct. 4-6. Col. James Robb Church, Army Medical Museum, Washington, D. C., Secretary.

Central States Pediatric Society, Detroit, Oct. 18-19. Dr. H. T. Price, Westinghouse Building, Pittsburgh, Pa., Secretary.

Colorado State Medical Society, Glenwood Springs, Sept. 4-6. Dr. F. B. Stephenson, Metropolitan Building, Denver, Secretary.

Delaware State Medical Society, Middletown, Oct. 8-9. Dr. W. O. La Motte, Industrial Trust Building, Wilmington, Secretary.

Indiana State Medical Association, Terre Haute, Sept. 26-28. Dr. Charles N. Combs, Terre Haute, Secretary.

Interstate Society of Radiology and Physiotherapy, Omaha, Sept. 18-19. Dr. Roland G. Breuer, Security Mutual Life Building, Lincoln, Neb., Secretary.

Kentucky State Medical Association, Crab Orchard, Sept. 17-20. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.

Medical Association of the Southwest, Kansas City, Mo., Oct. 4-8. Dr. E. H. Skinner, Rialto Building, Kansas City, Mo., Secretary.

Michigan State Medical Society, Grand Rapids, Sept. 11-13. Dr. F. C. Warnshuis, 410 Powers Building, Grand Rapids, Secretary.

Minnesota State Medical Association, St. Paul, Oct. 10-12. Dr. Carl B. Drake, Guardian Life Building, St. Paul, Secretary.

Mississippi Valley Medical Association, Hot Springs, Ark., Oct. 9-11. Dr. John L. Tierney, University Club Bldg., St. Louis, Secretary.

Missouri Valley, Medical Society of the, Omaha, Sept. 20-21. Dr. Charles W. Fassett, 115 East 31st Street, Kansas City, Secretary.

Nevada State Medical Association, Reno, Sept. 28-30. Dr. Horace J. Brown, Thoma-Bigelow Building, Reno, Secretary.

New England Surgical Society, Boston, Oct. 18-19. Dr. P. E. Truesdale, 151 Rock Street, Fall River, Mass., Secretary.

Pennsylvania, Medical Society of the State of, Pittsburgh, Oct. 1-4. Dr. W. F. Donaldson, Jenkins Arcade, Pittsburgh, Secretary.

Vermont State Medical Society, Bennington, Oct. 11-12. Dr. W. G. Ricker, St. Johnsbury, Secretary.

Virginia, Medical Society of, Roanoke, Oct. 16-19. Mr. G. H. Winfree, 104½ W. Grace St., Richmond, Secretary.

Wisconsin, State Medical Society of, Milwaukee, Oct. 3-5. Mr. J. G. Crownhart, 558 Jefferson St., Milwaukee, Secretary.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

26: 1-102 (July) 1923

*Health and Growth of Children in Institution. L. E. Holt and H. L. Fales, New York.—p. 1.
*Leukocyte Count in New-Born with Dehydration Fever. H. Bakwin and R. M. Morris, New York.—p. 23.
*Basal Metabolism of Prematurity. III. Metabolism Findings in Twenty-One Premature Infants. F. B. Talbot, W. R. Sisson, M. E. Moriarty and A. J. Dalrymple, Boston.—p. 29.
*Treatment of Colipyuria in Children. V. Poulsen, Copenhagen, Denmark.—p. 56.
*Effect of Drugs on Blood Agglutinins. D. M. Siperstein and A. L. Kvenberg, Minneapolis.—p. 65.
Mixed Tumor of Cervix and Vagina in Infant. S. McLean and M. Wollstein, New York.—p. 69.
*Indurated Ulcer of Tongue Due to Oidium Lactis. L. Wilkins and S. Bayne-Jones, Baltimore.—p. 77.
Some Aspects of Neuropathy in Infancy. C. De Lange, Amsterdam, Holland.—p. 83.
Gastro-Enterospasm as Manifestation of Autonomic Imbalance in Early Infancy. P. J. White, St. Louis.—p. 91.

Health and Growth of Children in Institution.—The observations made by Holt and Fales show that strikingly good health and excellent nutrition can be maintained in an institution. The factors which contributed to this result were: (1) regularity in habits of eating and in sleep, rest and exercise: (2) a liberal but simple diet, and (3) freedom from contact infections.

Leukocyte Count in New-Born with Dehydration Fever.—At birth, the leukocytes are increased, the counts usually ranging between 20,000 and 25,000 per cubic millimeter Bakwin and Morris state that there is no change in the leukocyte count in new-born infants with dehydration fever, the daily average in those with fever corresponding closely to that in babies without fever.

Basal Metabolism of Prematurity.—Talbot et al. found that the heat production of premature infants is very low when calculated on the basis of total production per twenty-four hours or per unit of body surface. On the basis of the theory as to the relation of heat production to body surface, one would expect the same heat production per unit of surface as in full-term infants; but they produce less heat, and it is necessary for this reason to give the premature baby much more protection against heat loss in its period of prematurity than at any other period of infancy. The basal metabolism findings are suggestive of what the heat production of the fetus might have been during the last two months prior to birth. The basal metabolism of the premature infant is lower than that of the full-term infant, and remains so for at least three months. Even if the handicap of time is allowed, the premature infant produces less heat on his expected birthday than does the full-term infant during the first week of life.

Treatment of Colipyuria.—The method adopted by Poulsen is, briefly, as follows: Twice a week the patient's bladder is washed out with a solution of silver nitrate, 2 per cent. for the girls and, owing to the pain connected with the treatment, 1 per cent. for the boys. Hexamethylenamin methylencitrate, or phenyl salicylate, was often used in addition, in doses according to age. This treatment is continued until the urine is sterile on two examinations at an interval of three or four days, i. e., it shows no growth on agar or broth after incubation for forty-eight hours. In the treatment of colipyuria Poulsen attaches great importance to the child's general health, improving it in every possible way. Thus other diseases that the patient may be suffering from, such as dyspepsia and anemia, are treated.

Effect of Drugs on Blood Agglutinins.—Serum agglutinins are apparently not altered by ether anesthesia, blood transfusion, or the drugs employed by Siperstein and Kvenberg—quinin, calcium, potassium and arsenic.

Ulcer of Tongue Caused by Fungus.—In a chronic indurated ulcer occurring on an infant's tongue, the mycelial filaments of a fungus identified as *Oidium lactis* were found by Wilkins and Bayne-Jones in great profusion in the ulcer, penetrating deep into the tissues. It was strongly agglutinated by the patient's serum. The ulcer did not show much improvement after local applications of tincture of iodin, but yielded readily to cauterization with silver nitrate.

American Journal of Ophthalmology, Chicago

6: 545-630 (July) 1923

Primary Ring Sarcoma of Iris. T. M. Li, Peking, China.—p. 545.
Nourishment of Corneal Epithelium. C. F. Charlton, Pasadena.—p. 556.
Effect of Drugs on Regeneration of Corneal Epithelium. L. Post, St. Louis.—p. 559.
Papillitis with Focal Infection. L. F. Appleman, Philadelphia.—p. 563.
Pseudoglioma and Remains of Tunica Vasculosa Lentis. S. R. Gifford, and J. S. Latta, Omaha.—p. 565.
Opaque Nerve Fibers. M. L. Lerner, Rochester, N. Y.—p. 571.
Lupus Vulgaris with Ocular Extension. W. S. Franklin and F. C. Cordes, San Francisco.—p. 573.
Hyoscin Idiosyncrasy. S. W. Green, Brooklyn, N. Y.—p. 578.
Treatment of Prolapse of Iris Following Cataract Extraction. H. F. Hansell Philadelphia.—p. 580.
Lens Injury Without Resulting Cataract. C. L. LaRue, Boulder, Colo. —p. 582.
Complete Congenital Cataract Bilateral. W. E. Scarborough, Albuquerque, N. M.
Painless Chalazion Operation. W. T. Davis, Washington, D. C.—p. 583.
Chalaziotome for Removal of Meibomian Cyst. J. M. Thorington, Philadelphia.—p. 584.
Neuroretinitis Resembling Retinitis Pigmentosa Probably Due to Congenital Syphilis. A. C. Lewis, Memphis, Tenn.—p. 585.

American Journal of Roentgenology and Radium Therapy, New York

10: 419-500 (June) 1923

Carcinoma of Small Bowel. M. M. Portis and S. A. Portis, Chicago.—p. 419.
*Roentgen-Ray Gastro-Intestinal Studies of Patients with Chronic Deforming Arthritis. R. G. Taylor, Los Angeles.—p. 424.
Comparison of Clinical and Roentgenologic Observations in Pulmonary Tuberculosis. F. S. Bissell, Minneapolis.—p. 428.
*Pulmonic and Cardiac Changes Following Inoculation with Foreign Protein. I. E. Liss, Scarsdale, N. Y.—p. 435.
Roentgen-Ray in Neurologic Diagnosis: Its Shortcomings and Possibilities. H. W. Crouse, El Paso.—p. 437.
Annular Shadows: Are They Cavities or Spontaneous Pneumothoraces? P. K. Brown, San Francisco.—p. 445.
*Case of Bullet in Heart with Recovery. F. C. Swearingen, Pomona, Calif.—p. 454.
Lumbar Transverse Processes. M. I. Bierman, St. Louis.—p. 456.
Treatment of Carcinoma of Esophagus by Deep Roentgen-Ray Therapy. A. H. Pirie, Montreal.—p. 459.
*Carcinoma of Floor of Mouth. D. Quick, New York City.
Intrathoracic Changes Following Roentgen-Ray Treatment of Breast Carcinoma. T. A. Groover, A. C. Christie, and E. A. Merritt, Washington, D. C.—p. 471.
Review of Present Status of Deep Roentgen-Ray Therapy. G. Holznecht Vienna.
Practical Roentgen-Ray Spectrometry and Its Physical Basis. Dozent and K. Staunig, Innsbruck, Austria.—p. 479.
Standardization of Ionization Measurements of Intensity and Measurements of Scattered and Secondary Roentgen-Rays Effective in Producing an Erythema. J. L. Weatherwax and E. T. Leddy, Philadelphia.—p. 488.
Stereoscopy of Accessory Sinuses. G. W. Grier, Pittsburgh.—p. 497.

Intestinal Infection Causes Arthritis.—Starting with the proposition that the cause of chronic deforming arthritis is an intestinal infection, probably, more specifically, a perverted bacterial flora in the intestines with secondary joint infections, roentgen-ray studies have been pursued by Taylor. The things observed have been: First, that the majority of these patients have a certain type of colon characterized typically by its abnormal length and abnormal mobility. Second, practically all the cases that have become chronic show so-called surgical lesions in the right colon, or in the ileum, or in both. Third, these lesions consist of adventitious bands similar to Jackson's membrane, involving the colon, usually above the ileocecal valve, and involving occasionally the ileum, producing the so-called Lane kink and other less typical fixations, or chronic appendicitis, or the results of an acute inflammatory process in the appendix with adhesions and fixation of the cecum and appendix to surrounding structures, notably the ileum and right colon itself (the appendix is frequently retrocecal), or postoperative adhesions following removal of the appendix. In connection with the theory of intestinal infection it seems reasonable to Taylor to believe that a local stasis distinctly favors infection and perversion of the normal flora. Granted that there is an infection, and

that there is a crippled portion of the intestine, it would seem reasonable to assume that the crippling of the intestine, especially if it produced local stasis, is a factor in the continuance of the infection, and certainly must be taken into consideration when an attempt is made to bring about a normal condition. Therefore, these lesions must be removed before marked permanent improvement in the local condition can be expected. A certain percentage of these cases that show some crippling but no actual stasis would seem to offer a chance for pure medical treatment; but the others are distinctly surgical.

Lung and Heart Changes Caused by Injection of Foreign Protein.—Of thirty-three subjects, varying in age, the larger percentage, after injection of foreign protein, presented definite pulmonary changes and, in a smaller percentage, cardiac changes.

Bullet in Heart.—The bullet was not recovered from the heart in Swearingen's case, one of attempted suicide. Six months after the accident the man was working at moderate manual labor apparently enjoying the best of health.

Radium Therapy for Carcinoma of Floor of Mouth.—In carcinoma of the floor of the mouth Quick advises interstitial radiation by means of unfiltered radium emanation tubes as the agent of choice in the treatment of the primary lesion. The problem of dealing with the metastatic extension of disease to cervical nodes is best handled on a conservative basis, using a combination of surgery, radium and roentgen rays.

American Review of Tuberculosis, Baltimore

7: 215-290 (June) 1923

Future of Tuberculosis Work in America. L. Brown, Saranac Lake.—p. 215.
*Clinical Study of Gassed Exsoldier with Special Reference to Pulmonary Tuberculosis. H. H. Cole, Springfield, Ill.—p. 230.
*Chaulmoogra Oil Esters in Treatment of Pulmonary Tuberculosis. H. H. Lissner, Los Angeles.—p. 257.
Suspension Stability Rate of Erythrocytes in Pulmonary Tuberculosis. S. A. Levinson, Chicago.—p. 264.
Lipoids and Enzymes of Blood in Pulmonary Tuberculosis. S. A. Levinson and W. F. Petersen, Chicago.—p. 278.
Chemistry of Tubercle Bacilli. T. B. Johnson and E. B. Brown, New Haven, Conn.—p. 285.

Effect on Lungs of Gassing.—Cole's observations of normal gassed subjects and gassed tuberculous patients disclosed that in the gassed patient there is a general and steady tendency toward recovery with decrease in physical disturbance. The exceptions are those cases in which the gassing has been very severe with considerable tissue damage. For these the ultimate prognosis is still in doubt. War gassing has little to do with the development of later pulmonary tuberculosis. The gassed patient who later develops tuberculosis usually runs a less severe course with less tendency to serious complications than the nongassed person.

Chaulmoogra Oil Esters in Tuberculosis.—Improvement in the cough, a lessening of the sputum with a decided diminution in the number of bacilli, and a decrease in the lung infiltration with a general increase in strength is credited by Lissner to the administration of ethyl esters of chaulmoogra oil. Doses of from 2 to 4 minims are better tolerated than larger doses, and will not cause reactions when given at weekly intervals. The dose should not be increased above 0.5 c.c. in any case and when the maximum dose is used, the interval between injections should be from two to three weeks. In any case the individual reaction must be the guide for further treatment. If these precautions are followed Lissner says the use of chaulmoogra oil esters is warranted in the treatment of pulmonary tuberculosis and its complications.

Archives of Neurology and Psychiatry, Chicago

10: 1-140 (July) 1923

Decerebrate Rigidity of Sherrington in Man: Its Recognition and Differentiation from Other Forms of Tonic Muscular Contraction. F. M. R. Walshe, London, Eng.—p. 1.
Telangiectasis of Spinal Cord. W. G. Spiller, and C. H. Frazier, Philadelphia.—p. 29.
*Complete Transverse Lesion of Spinal Cord with Retention of Superficial Reflexes. C. E. Dowman, Atlanta, Ga.
*Dual Nature of Efferent Nervous System: Further Study of Static and Kinetic Systems, Their Function and Symptomatology Contents. J. R. Hunt, New York.—p. 37.
Yellow Spinal Fluid, Its Origin and Significance. F. J. Scully, Hot Springs, Ark.—p. 83.

Complete Transverse Lesion of Spinal Cord with Retention of Superficial Reflexes.—Three cases are reported by Dowman with necropsies, in which there was complete severance of the cord at the levels of the fourth and fifth cervical segments, sixth and seventh thoracic segments, and third thoracic segment, respectively. In spite of this, there was retention of the following superficial reflexes in the parts below the level of the lesion: cremasteric reflexes on both sides, epigastric, abdominal, cremasteric and plantar reflexes (flexor type) on both sides: abdominal and cremasteric reflexes on both sides.

Dual Nature of Efferent Nervous System.—Hunt postulates for the whole efferent system a duality of function and structure in the interest of motility: a kinetic component for the production of movement; and a static component for the maintenance of posture.

Boston Medical and Surgical Journal

189: 45-90 (July 12) 1923

Some Medical Aspects of Training of College Athletes. D. C. Parmenter, Boston.—p. 45.
Acute Chest. J. B. Hawes, Boston.—p. 50.
Attempt at Psychogenic Interpretation of Some Familiar Mental Disorders. M. W. Peck, Boston.—p. 52.
Some Conclusions Derived from Last Five Years' Work at National Hospital for Speech Disorders. J. S. Greene, New York.—p. 57.
Value of Animal Experimentation to Medical Profession and to People. V. C. Vaughan, Chicago.—p. 62.
Activities of School Nurse When Under Proper Direction. H. G. Rowell, New Bedford, Mass.—p. 63.

Illinois Medical Journal, Oak Park

64: 1-76 (July) 1923

Some Factors on Which Successful Use of Local Anesthesia Depends. R. E. Farr, Minneapolis.—p. 9.
Laity's Idea of Physician. B. C. Keller, Chicago.—p. 13.
Prevention of Birth Injuries of Child. H. Ehrenfest, St. Louis, Mo.—p. 20.
Acute Lesions of Upper Abdomen. F. G. Dyas, Chicago.—p. 27.
Europe Today and Postgraduate Medicine. J. E. Lebensohn, Chicago.—p. 29.
Gastric Surgery. W. J. Hurley, Chicago.—p. 31.
*Case of Purpura Following Vaccination. E. F. Traut, Oak Park.—p. 35.
Food Desensitization in Bronchial Asthma. L. Unger, Chicago.—p. 40.
*Treatment of Carbuncle. E. J. Mitchell, Monmouth.—p. 41.
Standard for Determination of Cure of Gonorrhea in Male. F. M. Phifer and N. K. Forster, Chicago.—p. 42.
Continent Without an Orphan. B. Holmes, Chicago.—p. 47.
Roentgen-Ray Diagnosis of Bone Lesions. R. W. Lovett, Boston.—p. 48.
Medical Men Who Have Attained Fame in Other Fields of Endeavor. W. M. Thompson, Chicago.—p. 49.

Purpura Following Vaccination.—A man, aged 50, was vaccinated on the arm in the usual manner. Three days afterward the area of scarification became itchy and commenced to swell. On the same day blood oozed from his gums. The following day there were several penny-sized blue spots on his tongue. Small red spots appeared on the vaccinated arm and then over the whole body, with large purple spots on the trunk. Epistaxis started on the same day and continued four days. It was not profuse and did not cause alarm. There were no joint pains or abdominal symptoms. There was no gross blood in the urine or feces. The patient walked to the office seven days after vaccination. His general appearance was fair. A herpes vesicle on the lip was filled with blood. The ecchymoses into the tongue were about 1 cm. in diameter. There were small effusions of blood into the gums. No conjunctival or retinal hemorrhages were noted. There was a large healing ulcer on the seat of vaccination. It was surrounded by numerous small hemorrhages which became more scattered as the distance from the ulcer increased. The trunk and limbs were dotted by ecchymoses from 1 to 6 cm. in diameter. The legs and arms were liberally sprinkled with petechiae and the application of a ligature brought out fresh crops. A very slight contusion would produce an ecchymosis. Physical examination was otherwise essentially negative. The urine was normal, and so was the blood. The hemorrhages rapidly disappeared and the ulcer

at the vaccination site healed. The patient had his first attack of purpura at 32. There was no precipitating cause but his health had been poor. The attack was slight. There were only a few petechiae on the legs and arms. Two years later he had an attack with more numerous skin hemorrhages. His third attack occurred at 37, following his participation in a hotly contested baseball game. On this occasion he had epistaxis lasting sixty-four hours. At 40 he had the fourth attack. It started in the tongue without any apparent cause and his eyelids filled with blood. Three years later he had an attack featured by smoky urine and bloody stools. The skin hemorrhages were very extensive. The bleeding continued ten days and it was thought that he would not survive. The attack stopped as suddenly as it had begun. The sixth attack occurred at 41. His condition following the attacks had always been good.

Potassium Permanganate Treatment of Carbuncle.—Mitchell injects through the entire diseased mass a solution of potassium permanganate. He uses the chemical in excess of saturation so as to have a part of it in fine suspension.

Johns Hopkins Hospital Bulletin, Baltimore

34: 205-240 (July) 1923

*Studies of Diabetes Mellitus. III. Use of Pancreatic Extract Insulin in Treatment. W. S. McCann, R. Hannon and K. Dodd, Baltimore.—p. 205.
*Treatment of Active Infantile Tetany with Radiations from Mercury Vapor Quartz Lamp. H. Casparis and B. Kramer, Baltimore.—p. 219.
*Bacteriostatic Action of Urine After Intravenous Administration of Mercurochrome to Normal Rabbits. J. H. Hill and J. A. C. Colston, Baltimore.—p. 220.
Destruction of Bacillus Radicicola by Connective Tissue Cells of Chick Embryo in Vitro. M. R. Lewis, Baltimore.—p. 223.
Increasing Significance of Permeability Problems for Biologic and Medical Scences. H. J. Hamburger, Baltimore.—p. 226.
Spontaneous Contractions of Fallopian Tube of Domestic Pig with Reference to Oestrous Cycle. D. L. Seckinger, Baltimore.—p. 236.

Pancreatic Extract Insulin in Diabetes.—Of ten representative cases of severe diabetes treated by McCann, Hannon and Dodd with insulin, nine derived some benefit, which was measured objectively in terms of lowered blood sugar values, decreased glycosuria, improved oxidation of glucose, and in control of ketosis, as well as in the relief of symptoms. Wide variations were observed in responses of the different patients to unit doses of the drug. The extra calories of food which patients were enabled to utilize per unit of insulin varied from 12 to 70 calories. The amount of extra carbohydrate which was utilized per unit (all sources of glucose being considered) varied from 0.5 to 3.6 gm. In the presence of severe infection the action of the drug is apparently less effective. The importance of exact diet reguation is emphasized. Cautious methods of balancing gradually the diet and dose are illustrated. Attention is drawn to the dangers of hypoglycemia from overdosing. Prevention and treatment of this condition are discussed. Insulin is a very powerful and very valuable therapeutic agent from which most patients suffering from diabetes will derive benefit. It has failed therapeutically in certain cases in this series. It is in no sence a cure for diabetes so that it is highly important that other methods of influencing the disease favorably should not be neglected.

Treatment of Infantile Tetany with Mercury Vapor Quartz Lamp.—Five children suffering with active infantile tetany were exposed by Casparis and Kramer to the rays of the mercury vapor quartz lamp in order to determine (1) whether such treatment regularly brings about the disappearance of symptoms, (2) what effect it has on the calcium concentration of the serum, and (3) whether healing of the accompanying rachitic process can be accomplished at the same time. Following raying, the clinical manifestations of tetany disappeared in from three to seven days, and the calcium concentration of the serum increased approximately to the normal. Similar results may be obtained when calcium chlorid is administered, but the inorganic phosphorus concentration of the serum is not increased when calcium chlorid is given. If the phosphorus of the serum is normal, the administration of calcium chlorid produces a definite decrease of its concentration. When, however, raying is employed, not only does the calcium concentration of the serum increase but the inorganic phosphorus concentration also increases. This treatment, then, not only brings about a subsidence of the manifestations of active tetany but also cures the accompanying rickets.

Bacteriostatic Action of Urine After Mercurochrome Injection.—Inhibitive action of urine following intravenous injection of 1, 2.5, 5 and 10 mg. per kilogram of body weight of mercurochrome is shown. In two cases bactericidal urine has been obtained by Hill and Colston, one after a single injection of 1 mg. per kilogram, and one after a single injection of 5 mg. per kilogram. The authors conclude that the clinical trial of moderate intravenous doses of mercurochrome is justified from the point of view of bacteriostatic action in *B. coli* infections of the urinary tract.

Journal of Biological Chemistry, Baltimore

56: 297-700 (June) 1923

*Placental Transmission. I. Calcium and Magnesium Content of Fetal and Maternal Blood Serum. L. J. Bogert and E. D. Plass, Detroit.—p. 297.
*Placental Transmission. II. Various Phosphoric Acid Compounds in Maternal and Fetal Serum. E. D. Plass and E. H. Tompkins, Baltimore.—p. 309.
*Acidosis of Ether Anesthesia in Dog. C. D. Leake, E. W. Leake and A. E. Koehler, Madison, Wis.—p. 319.
Fat Soluble Vitamin. XI. Storage. H. Steenbock, M. T. Sell, and E. M. Nelson, Madison, Wis.—p. 327.
Id. XII. Fat Soluble Vitamin Content of Millets. H. Steenbock, M. T. Sell and J. H. Jones, Madison, Wis.—p. 345.
*Id. XIII. Light in Its Relation to Ophthalmia and Growth. H. Steenbock and E. M. Nelson, Madison, Wis.—p. 355.
*Availability of Calcium Salts. H. Steenbock, E. B. Hart, M. T. Sell, and J. H. Jones, Madison, Wis.—p. 375.
Fructose, Glucose and Galactose Tolerance in Dogs. M. Bodansky, Ithaca, N. Y.
*Determination of Blood Urea. J. A. Behre, New York.—p. 395.
Reaction Between Proteins and Nitrous Acid. Tyrosin Content of Deaminized Casein. H. B. Lewis and H. Updegraff, Ann Arbor, Mich.—p. 405.
Product of Mild Acid Hydrolysis of Wheat Gliadin. H. B. Vickery, New Haven.—p. 415.
Chlorid and Conductivity Determinations on Plasma. H. C. Gram and A. Norgaard, Copenhagen, Denmark.—p. 429.
Tisdall Method for Determination of Calcium in Small Amounts of Serum. F. F. Tisdall, Toronto.—p. 439.
*Function of Parathyroids. H. A. Salvesen, Christiania, Norway.—p. 443.
Constituents of Waxlike Coating on Surface of Apple. C. E. Sando, Washington, D. C.—p. 457.
Modification of Folin-Wu Method for Making Protein Free Blood Filtrates. R. L. Haden, Kansas City, Kan.—p. 469.
*Inorganic Constituents of Blood in Experimental Nephritis. W. Denis, New Orleans.—p. 473.
Chemical Study of Several Marine Mollusks of Pacific Coast: Reproductive System. P. G. Albrech, Stanford Universiy, Calif.—p. 483.
*Synthesis of "Bios" by Yeast Grown in Solution of Purified Nutrients. M. B. MacDonald, Baltimore.—p. 489.
Digestibility of Proteins in Vitro. IV. Digestibility of Cottonseed Globulin and Effect of Gossypol on Petictryptic Digestion of Proteins. D. B. Jones and H. C. Waterman, Washington, D. C.—p. 501.
*Glucokinin. New Hormone Present in Plant Tissue. J. B. Collip, Alberta, Edmonton, Canada.—p. 513.
Separation of Hexone Bases from Certain Protein Hydrolysates by Electrolysis. G. L. Foster and C. L. A. Schmidt, Berkeley, Calif.—p. 545.
*Basal Metabolism and Menstrual Cycle. G. Wakeham, Boulder, Colo.—p. 555.
Acid-Base Equilibrium in Simple Two-Phase Systems. C. D. Murray, New York.—p. 569.
Regulation of Osmotic Pressure (Conductivity, Chlorides, Freezing Point, and Proteins of Serum). H. C. Gram, Philadelphia.—p. 593.
Initial Acidosis in Anesthesia. G. E. Cullen, J. H. Austin, K. Kornblum and H. W. Robinson, Philadelphia.—p. 625.
Study of Calcium Balance of Dairy Cows. W. G. Gaessler and A. C. McCandlish.—p. 663.
Does the Chick Require Fat Soluble Vitamins? A. D. Emmett and G. Peacock, Detroit.—p. 679.
Propionic Acid Fermentation of Lactose. J. M. Sherman and R. H. Shaw, Washington.—p. 695.

Placental Transmission of Calcium and Magnesium.—The calcium and magnesium content of maternal and fetal blood serum of twenty-three mothers and their babies was determined by Bogert and Plass. The calcium content of the blood serum was consistently higher in the fetus at the time of birth than in the mother. The serum calcium of the mother at the end of labor is usually below the physiologic range for normal nonpregnant women, while the average maternal serum calcium is distinctly lower than the average value for normal women. The serum calcium of the child at birth usually exceeds the upper limits of the normal physiologic

range for adults. The magnesium content of fetal and maternal serum is generally the same, although in a few instances higher values were observed in the fetus. There seems to be a tendency in certain cases for both the maternal and fetal serum magnesium to be below normal, although the average values found at the end of labor (maternal, 2.0 mg. and fetal, 2.1 mg. of magnesium per hundred cubic centimeters of serum) are within the normal range.

Placental Transmission of Phosphoric Acid Compounds.—The distribution of the various phosphoric acid compounds between the maternal and fetal serums, separated by the barrier of placental cells, was studied by Bloor's method. Evidence has been adduced in support of the belief that the fats and lipoids are synthesized in the fetal organism, and it has been demonstrated that the inorganic phosphoric acid furnishes another example of an easily diffusible body being maintained in higher concentration in the fetal blood, where an optimum quantity is desirable for satisfactory bone production.

Acidosis of Ether Anesthesia.—The evidence presented by the Leakes and Koehler indicates that the acidosis of ether anesthesia can be explained neither by a compensatory reaction to an acapnia, nor by the entrance of acid into the blood, but rather by the withdrawal of base from it.

Fat Soluble Vitamin.—Young rats raised on a stock ration and transferred to a purified ration carrying yeast as its only source of vitamins, Steenbock and Nelson found, will grow for a few weeks then cease growing completely or partially and ultimately will fail due to the incidence of ophthalmia or infections of the respiratory tract. Aerated cod liver oil or light from a quartz mercury-vapor lamp, both well known as antirachitic agents, will eliminate the initial failure of growth, or, when prevalent, will restore it without appreciably postponing the final failure due to ophthalmia or respiratory diseases. Inasmuch as aerated cod liver oil did not cure ophthalmia, the experiments lend support to the theory of McCollum that cod liver oil contains two vitamins; viz., vitamin A and the antirachitic vitamin.

Availability of Calcium Salts.—In experiments with young rats no difference was found by Steenbock et al. in the availability of calcium lactate, carbonate, phosphate, silicate, or sulphate when these were fed in liberal amounts.

Determination of Blood Urea.—Behre's results indicate that the true urea content of blood is best represented by the urea figure obtained from blood filtrates. These figures are the same or slightly lower than the figures obtained from whole blood with small amounts of enzyme. The results obtained with human blood suggest very definitely that it would be worth while to study the apparent urea content of these bloods (using whole blood) with small and with large amounts of soy bean.

Function of Parathyroids.—Salvesen asserts that the symptoms of parathyroid insufficiency are due to calcium deficiency. The parathyroids control the calcium level of the blood, and, by doing so, they influence the function not only of the muscle and nerve tissues, but probably of all the organs.

Inorganic Blood Constituents in Experimental Nephritis.—Denis claims that the fact has been definitely established that in certain cases of human nephritis there is a marked increase in the concentration of inorganic phosphates in the serum and a corresponding decrease in calcium, but in her experiments no suggestion of such a condition was noted. The results on whole blood are essentially similar to those obtained on strum; a retention of sulphate is noted in the most severe cases, but the concentrations of all the other constituents, including potassium, show only slight variations with no indications of even a slight degree of retention.

Growth Stimulating Substance in Yeast Not a Vitamin.—The experimental data set forth by MacDonald make it clear that the growth stimulating substance for yeast which Funk and Dubin have recently discussed cannot logically be placed in the class of vitamins. It is not an indispensable nutrient principle for yeast, since it is synthesized during the slow proliferation of yeast cells in a medium of purified nutrients.

Glucokinin: New Plant Hormone.—Extracts have been prepared by Collip from the vegetative tissues of several angiospermous plants as well as yeast, subcutaneous administration of which produces marked hypoglycemia in normal rabbits. Certain of these extracts have been administered to depancreatized dogs. A fall in the level of blood sugar and a decrease in in the hourly excretion of sugar resulted. The primary effect was an increase in the rate of sugar elimination.

Basal Metabolism and Menstrual Cycle.—It is shown by Wakeham that there is a distinct fall in basal metabolism during or immediately after menstruation and a premenstrual rise. Further suggestions, which are regarded as merely tentative, are (1) that basal metabolism is considerably higher, on the average, in those engaged in strenuous labor than in those of sedentary occupations; (2) that basal metabolism fluctuations in those living under uniform conditions are less than in those whose mode of life is more varied; (3) that the basal metabolism variation due to the menstrual cycle, while in every case less than the average daily fluctuations, is greater in active women than in sedentary women; (4) that causes which produce too frequent menstruation are likely to be accompanied by high basal metabolism; (5) that causes which delay or suppress menstruation are likely to be accompanied by low basal metabolism.

Journal of Infectious Diseases, Chicago

33: 1-112 (July) 1923

Hydrogen-ion Concentration vs. Titratable Acidity in Culture Mediums. A. J. Quirk and E. H. Fawcett, Washington, D. C.
*Experimental Studies on Infection and Immunity in Typhus. E. Weil and F. Breinl, Prague, Ger.—p. 60.
*Epidemiology of Scarlet Fever in School Outbreak. W. P. Shepard and H. S. Diehl, Minneapolis.—p. 75.
*Bactericidal Action of Blood of Rabbits Immunized Against Pneumococci. H. E. Smiley, Boston.—p. 88.
Bacteriologic Study of Pneumonia in Sheep. R. S. Spray, Chicago.—p. 97.

Infection and Immunity in Typhus.—The method described by Weil and Breinl consists in incorporating immune serum and virus into the organism at the same time in such proportions that the infection, i. e., the development of the virus, is not prevented, but that the infectious symptoms alone are suppressed. They have not determined how far it will be possible to use the experience gained in animal experiments for the immunization of man.

Epidemiology of Scarlet Fever.—A school epidemic of fifty-nine cases of scarlet fever among 840 students occurring over a period of sixty-one days was studied by Shepard and Diehl. Features offering unusual opportunity for study were: The large percentage of students from rural or small town districts; the possibility of absolute enforcement of control measures; and a comparison of the economic loss incident to control measures alone and to the epidemic alone. The incidence of scarlet fever was greater among students from farms and small towns than from cities. A concurrent epidemic of a mild form of influenza had no apparent effect on the epidemic of scarlet fever. Some evidence is offered to show the possibility of a person with mild angina infecting others with scarlet fever. Daily examinations of the entire group of affected students were not sufficient to control the epidemic. Isolation of persons showing the slightest abnormality suggestive of beginning scarlet fever was necessary to control the epidemic. The economic loss alone occasioned by such drastic isolation measures was slightly less in this epidemic than the probable loss from the disease alone.

Bactericidal Action of Blood of Rabbits Immunized Against Pneumococci.—Although the best method of producing bactericidins in the blood against pneumococci has not as yet been determined, the method which Smiley used successfully was to give an initial injection of heat killed organisms followed by large and repeated doses of live organisms. The preliminary injection of heat killed organisms lessened the chance of pneumococcic infection. In the rabbits thus "immunized" bactericidins appeared in the blood ten days after the last injection, and persisted in the blood for periods ranging from thirty to seventy days.

Journal of Laboratory and Clinical Medicine, St. Louis

8: 563-630 (June) 1923

*Importance of Suprarenals in Action of Certain Alkaloids. II. Strychnin on Blood Picture. C. W. Edmunds and P. C. Lloyd, Ann Arbor, Mich.—p. 563.
*Histologic Study of Muscle Degeneration Produced by Local Injections of Insulin. D. J. Bowie and W. L. Robinson, Toronto.—p. 569.
Effect of Phenol in Estimation of Reducing Sugars by Picramic Acid Methods. H. C. Sweany, Chicago.—p. 572.
Clinical and Laboratory Procedures in Pediatrics. A. Levinson, Chicago. —p. 579.
Case of Erythremia. I. R. Sutton and W. Cole, Anaheim, Calif.—p. 589.
*Comparative Study of Various Methods of Hemoglobin Determinations. E. G. Senty, Rochester, Minn.
Determination of Uric Acid in Blood by the Method of Folin and Wu. R. S. Hubbard and L. L. Finner, New York.—p. 605.
Relation Between the Presence of Indican and of Uroroseinogen in Urine in Certain Diseases. J. Rosenbloom, Pittsburgh.—p. 610.
Emergency Microtome. A. H. Glaister, Technician, Florence, Ala.—p. 611.
Gastric Analysis and Constancy of Percentile Relationship Among Titrable Factors of Gastric Secretion. B. S. Levine, Waukesha, Wis. —p. 612.
*Estimation of Albumin in Urine. A. J. Quick, Philadelphia.—p. 615.
Phenoltetra-Chlorphthalein: Clinical Test for Liver Function. E. Bogen, Cincinnati.—p. 619.
*Useful Urinary Finding in Diagnosis of Hydronephrosis and Pyonephrosis. J. Rosenbloom, Pittsburgh.—p. 621.

Effect of Strychnin on Blood.—The changes in the total number of leukocytes in the dog and in the relative proportions of the different varieties of leukocytes produced by strychnin, according to Edmunds and Lloyd, are only indirectly due to strychnin; they are directly due to the epinephrin which is secreted by the suprarenals under the influence of strychnin. The epinephrin thus secreted is not in sufficient amount to alter the number of the red blood cells.

Muscle Degeneration from Insulin Injections.—Intramuscular injections of insulin, Bowie and Robinson found, called forth near the site of injection a very marked degeneration of the muscular fibers with leukocytic invasion. This same type of lesion, however, was found to be caused by other agencies such, for example, as hypertonic glucose solution. Isotonic saline, on the other hand, as a rule produced only slight localized areas of degeneration although hypertonic solutions had an effect like that of insulin. These lesions probably explain the considerable pain and discomfort that is not uncommonly complained of, and it is pointed out that if the lesions can be produced by hypertonic saline it is altogether likely that they might become quite extensive when various therapeutic agents are employed.

Comparative Value of Methods of Hemoglobin Determinations.—Senty compared the various methods and apparatus used for the determination of hemoglobin. The standard Dare hemoglobinometer, he says, is a practical instrument for hemoglobin determinations from 25 to 65 per cent. Above 70 per cent. the hemoglobin estimations on the standard Dare instrument are very misleading. The Newcomer disk method is a unique and practical method of estimating the percentage of hemoglobin in the blood. The percentages obtained are reliable. The Cohen and Smith acid hematin method is accurate and fairly practical and should be used in the estimation of the percentage of hemoglobin in all suspected cases of anemia. The special Dare instrument is a decided improvement over the standard Dare instrument. The Tallqvist hemoglobinometer is probably quite as accurate as the standard Dare instrument.

Estimation of Albumin in Urine.—A comparative study of the modifications of the Esbach method for the determination of protein in urine has been made by Quick. Since the available Esbach tubes were unsatisfactory, a new tube was designed. Esbach's reagent, Tsuchiya's reagent and a 10 per cent. trichloracetic acid were studied as precipitating agents. The influence of temperature and of specific gravity of urine were determined. A 10 per cent. solution of trichloracetic acid as a precipitating reagent was shown to yield the most satisfactory results.

Fat in Urine in Pyonephrosis and Hydronephrosis.—In three cases of pyonephrosis and in two cases of hydronephrosis Rosenbloom found globules of fat in the urine. These globules are usually large and strongly refractile and stain black with osmic acid and red with sudan III. They are also soluble in ether. In one of the cases the fat droplets were only found in the urine obtained on chatheterization of the diseased kidney. The catheterized urine from the normal kidney was free of the fat droplets.

Kentucky Medical Journal, Bowling Green

21: 301-382 (July) 1923

Surgery of Toxic Thyroid. L. W. Frank, Louisville.—p. 306.
Juvenile Tuberculosis. O. O. Miller, Louisville.—p. 309.
Leukoplakia Associated with Lichen Planus: Two Cases. W. J. Young, Louisville.—p. 317.
Fermentative Diarrhea. J. W. Bruce, Louisville.—p. 317.
Sacral Anesthesia in Obstetrics. S. P. Oldham, Owensboro.—p. 321.
Diagnosis of Incipient Tuberculosis. C. Richards, Glasgow.—p. 324.
Insulin Treatment of Diabetes Mellitus. R. H. Davis, Louisville. —p. 325.
Abortin, Criminal and Inevitable. N. W. Moore, Cynthiana.—p. 332.
Protein Hypersensitiveness. J. W. Moore, Louisville.—p. 337.
Mastoidectomy; Closure of Wound. S. S. Watkins, Louisville.—p. 347.
Primary Carcinoma of Liver. Report of Case. J. A. Kasper, Louisville.—p. 349.
Case of Acute Osteomyelitis. J. D. Trawick, Louisville.—p. 353.
Ruptured Ectopic Gestation; Operation; Recovery. C. Farmer, Louisville.—p. 355.
Carcinoma of Breast. Report of Case. J. W. Price, Jr., Louisville. —p. 357.
Use and Abuse of Roentgen Rays. L. H. Kerr, Louisville.—p. 364.
*Case of Brain Tumor with Unusual Clinical Findings. M. Flexner, Louisville.—p. 368.
Physiology of Internal Secretions. J. H. Hohnsted, Ft. Thomas. —p. 371.
Infant Feeding. T. J. Glenn, Covington.—p. 372.

Dural Epithelioma.—Flexner cites the case of a man, aged 57, who complained of weakness. Low blood pressure was found as well as a glycosuria and difficulty in gait. Definite pathology was evident in the spinal fluid, with one borderline Wassermann reaction. Glycosuria disappeared after neoarsphenamin. The process progressed rapidly to death, in about five weeks, with evidence of cerebral involvement appearing only three days before death. The diagnosis lay between cerebral syphilis, brain tumor and possibly lethargic encephalitis. The course was atypical for a brain tumor, but it proved to be a case of dural endothelioma.

New York Medical Journal and Medical Record

118: 1-60 (July 4) 1923

Physiotherapy. N. E. Titus, New York.—p. 1.
Physical Therapy. J. H. Burch, Syracuse.—p. 4.
Problem of Physiotherapy Aide. A. B. Hirsh and E. Wellington, New York.—p. 8.
Physiotherapy Clinic a Necessity of Modern Hospital. R. Kovacs, New York.—p. 10.
Urgent Need for Greater Use of Physical Therapy by Internists. J. Gutman, Brooklyn.—p. 13.
Electrotherapeutics in Urology. V. C. Pedersen, New York.—p. 18.
Physiotherapy in Orthopedics. C. R. Brooke, New York.—p. 22.
Physiotherapy in Medical Department of United States Navy. E. G. Hakansson, Washington, D. C.—p. 26.
Employment of Some Forms of Electricity in Cardiovascular Diseases. E. C. Titus, New York.—p. 27.
Exercise in Therapeutics. H. E. Stewart, New Haven, Conn.—p. 29
Exercise in Treatment of Hypertension. C. W. Crampton, New York —p. 31.
Practical Method to Determine Correct Roentgen-Ray Dose in High Voltage Treatment. H. Holfelder, Frankfort on the Main, Germany. —p. 35.
Use of Static Electricity in Treatment of Noninfected Inflammation. W. B. Snow, New York.—p. 37.
Roentgen-Ray Therapy in Exophthalmic Goiter. S. Tousey, New York. —p. 41.
Modern Methods of Hydrotherapy. C. Pope, Louisville.—p. 44.
Roentgenoscopy as Cause of Menstrual Disturbance. S. Weiss, New York.—p. 48.
Otitis Media and Mastoiditis Treated by Radiant Light and Heat from Electric Lights. F. T. Woodbury, New York.—p. 49.

Philippine Journal of Science, Manila

22: 559-650 (June) 1923

*Diphtheria Carriers and Their Significance in Philippines. L. Gomez and R. Navarro.—p. 559.
Hypersensitiveness of Philippine Dogs to Strychnin. M. Manresa.—p. 567.
Philippinen Rutelides (Coleoptera, Lamellicornia). V. F. Ohaus.—p. 581.
New Malayan Wasps of Subfamily Pseninae. S. A. Rohwer.—p. 593.
Disease of Satsuma and Mandarin Orange Fruits Caused by Gloeosporium Foliicolum Nishida. H. A. Lee.—p. 603.
Solid Bitumens of Leyte. B. Nelson.—p. 617.
Hexamethylenetetramine as Reagent in Microscopic Qualitative Chemical Analysis. H. I. Cole.—p. 631.

Significance of Diphtheria Carriers in Philippines.—Cultural studies were made by Gomez and Navarro of material

obtained from the throats of about 1,775 healthy individuals to determine the prevalence of diphtheria carriers in the Philippines, and animal tests have been performed to determine the virulence of the different strains of diphtheria bacilli isolated in pure culture. At least 2.08 per cent. of healthy persons in the Philippine Islands harbor diphtheria bacilli in their throats. The diphtheria bacilli have been found nonvirulent in about 89 per cent. and virulent in about 11 per cent. of the carriers. Apparently the disease does not become epidemic in Manila. In spite of the continuous existence of carriers of nonvirulent bacilli and the occasional existence of virulent ones in persons living in institutions where a certain number have been proved to be susceptible to the disease by Schick's test, no clinical diphtheria has ever been known to develop among the inmates. From these data it is concluded, that, for the control of diphtheria in the Philippines, it is only necessary (*a*) to examine the throats of those persons who have come in intimate contact with cases, (*b*) to isolate those who are carriers, and (*c*) to liberate them later if the animal tests show that the bacilli they harbor are not virulent.

Rhode Island Medical Journal, Providence

6: 99-114 (July) 1923

Some Problems in Artificial Feeding. H. E. Utter, Providence.—p. 99.
Principles Underlying Weaning from Breast. H. G. Calder, Providence.—p. 101.

Southern Medical Journal, Birmingham

16: 495-570 (July) 1923

Aplastic Anemia. Report of Case. Differential Diagnosis of Anemias Due to Hemolysis and to Hemopoietic Degeneration. B. W. Fontaine, Memphis.—p. 495.
Case of Paramyoclonus Multiplex Epilepticus. N. M. Owensby, Atlanta.—p. 500.
*Tropical Sprue and Its Relationship to Disturbances of Pancreatic Digestion. D. N. Silverman and W. Denis, New Orleans.—p. 503.
Treatment of Leprosy. R. M. Wilson, Kwangju, Korea.—p. 507.
*Case of Convulsions Followed by Amnesia. P. F. Barbour, Louisville.—p. 511.
Case of Congenital Syphilis with Ascites. R. C. Spence and L. C. Tittle, Dallas, Texas.—p. 512.
*Virulent Diphtheria Bacilli Isolated from Chickens Suffering from Roup. W. Litterer, Nashville.—p. 514.
School Inspection Basic in Control of Communicable Diseases. J. Thames, Little Rock, Ark.—p. 518.
Restoration of Burnt Child. V. P. Blair, St. Louis.—p. 522.
Present Day Obstetrics Procedure. T. S. Field, Jacksonville, Fla.—p. 527.
Ileorectovesical Fistula, Probably of Syphilitic Origin. E. G. Ballenger, and W. R. Smith, Atlanta, Ga.—p. 532.
Review of Six Cases of Meckel's Diverticulum with Reference to Caution in Resections. R. M. Harbin, Rome, Ga.—p. 534.
Peptic Ulcer and Its Surgical Treatment. M. J. Henry, Louisville.—p. 537.
Tendon Transplantation. W. S. Roberts, Birmingham, Ala.—p. 545.
Roentgen-Ray versus Radium in Treatment of Uterine Hemorrhage. J. W. Lanham, Atlanta.—p. 550.
Vaccine Treatment of Vernal Conjunctivitis. J. F. Townsend, Charleston, S. C.—p. 555.
Conservatism in Nasal Surgery. W. W. Potter, Knoxville, Tenn.—p. 560.

Tropical Sprue and Disturbed Pancreatic Digestion.—The observations made in one case cited, Silverman and Denis state, do not warrant general conclusions. The enzymes of duodenal contents were present to a considerable extent during the clinical course of the disease, and these enzymes greatly increased in strength, even up to normal amounts, during clinical improvement of the case. These facts would indicate that in tropical sprue the pancreas does not always undergo extensive or permanent damage and that this gland may assume its normal digestive function.

Convulsions Followed by Amnesia.—Barbour reports the case of a baby, aged 16 months, that, as a result of a severe convulsion, lost memory for words, recognition and affection for her parents, and physical coordination. They returned in reverse order.

Virulent Diphtheria Bacilli Isolated from Chickens.—Litterer reports what he believes to be the first instance in which virulent Klebs-Loeffler bacilli have been isolated from fowls. It is probable that the fowls were infected from human beings harboring virulent bacilli, since persistent virulent carriers were demonstrated in the families that owned the fowls. Experiments on healthy fowls failed to produce a permanent carrier state. Negative results were also obtained in two fowls suffering with roup. The demonstrations of virulent Klebs-Loeffler bacilli in fowls opens up a new means of dissemination of the Klebs-Loeffler bacilli among human beings.

Southwestern Medicine, Phoenix, Ariz.

7: 221-272 (July) 1923

Colloidal Gold Test of Spinal Fluid. P. B. Newcomb, Tucson, Ariz.—p. 221.
Correction of Deformities of Nose and About Orbit by Plastic Surgery. J. P. de River, San Francisco.—p. 226.
Hodgkin's Disease Case Report. W. A. Holt, Globe, Ariz., and W. B. Watts, Miami, Ariz.—p. 232.
Primary Carcinoma of Appendix. E. B. Rogers, El Paso.—p. 236.
Does Public Health Work Pay? W. A. Evans, Evanston, Ill.—p. 238.
Pituitary Gland. C. A. Wright, El Paso.—p. 246.
Case Reports. R. Fersuson, Bisbee, Ariz.—p. 247.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Radiology and Electrotherapy, London

27: 353-384 (May) 1923

Elevation of Diaphragm. Unilateral Phrenic Paralysis. J. M. W. Morrison.—p. 353.
Deep Roentgen-Ray Therapy. Pilger.—p. 364.
Dr. Seemann's Roentgen-Ray Spectrograph.—p. 373.

British Journal of Tuberculosis, London

17: 107-154 (July) 1923

Artificial Pneumothorax B. Hudson and J. Mamie.—p. 107.
Tuberculosis Problems in India. C. Muthu.—p. 118.
*Physics of Heliotherapy. A. Rosselet.—p. 120.
Rest Breathing as Physiologic Adjuvant in Treatment of Pulmonary Tuberculosis. S. A. Knoof.—p. 124.
Significance of Lung Rest in Treatment of Pulmonary Tuberculosis. S. H. Stewart.—p. 127.

Physics of Heliotherapy.—According to Rosselet the sun cure in winter is dependent on three important factors: (*a*) the relatively short length of the solar spectrum; (*b*) the relatively feeble maximum intensity of the solar radiation, and (*c*) the relatively short duration of this maximum intensity. The sun cure in summer is also dependent on three factors: (*a*) the maximum length of the spectrum; (*b*) the maximum intensity of the sunlight, and (*c*) the prolonged duration of this maximum intensity.

British Medical Journal, London

2: 51-90 (July 14) 1923

*Experimental Basis of Endocrine Therapy. A. J. Clark.—p. 51.
Treatment of Gonococcal Infection by Diathermy. E. P. Cumberbatch and C. A. Robinson.—p. 54.
Diathermy for Malignant Disease of Mouth, Pharynx and Nose. N. Patterson.—p. 56.
*Case of Diabetes Treated with Insulin. E. L. Springs, D. V. Pickering and A. J. Leigh.—p. 58.
Behavior of Blood Sugar Under Action of Insulin and Other Agents. G. S. Eadie.—p. 60.
Case of Actinomycosis with Recovery. A. D. Bigland and F. C. H. Sergeant.—p. 61.
Suction in Treatment of Septic Ears. W. Stuart-Low.—p. 62.

Value of Endocrine Therapy.—The review given by Clark indicates that the therapeutic action of only a few of the endocrine extracts is established with any degree of certainty. He also discusses the basis of proof for polyglandular therapy. Typical polyglandular formulas usually contain some or all of the following preparations: dried thyroid, extract of the posterior lobe of the pituitary, thymus, suprarenals, and extract of testes or ovaries. The remedy is usually given by the mouth. Of these constituents the thyroid is beneficent if the patient chances to be suffering from thyroid deficiency, and in other cases there is usually too little present to do any harm. Pituitary extract is inactive when given by the mouth, except as regards its effect in reducing carbohydrate tolerance in cases of pituitary tumor deficiency; this action would be assisted by the thyroid, but it is difficult to see what benefit it would produce for the patient. Pituitary deficiency, as manifested by Fröhlich's syndrome or by diabetes insipidus, is very rare, and outside these conditions there is no rational indication for the use of pituitary extract.

other than its usual use as a temporary stimulant to the uterus, intestine or blood vessels. It is not known whether the thymus even has an internal secretion, nor is it known whether its extracts have any therapeutic action. As regards epinephrin, it is not certain whether it is essential for the normal health of the body. The low blood pressure and asthenia in Addison's disease are not simple results of epinephrin deprivation. Epinephrin, when given by the mouth, may be of benefit in gastric hemorrhage or to relax esophageal spasm, but otherwise there are few actions that it has been shown to exert when given by the mouth. Finally, nothing is known for certain about the action of extracts of the gonads. Clark suggests that the administration of a mixture of the above nature is as far removed from rational therapy as is the writing out of a charm on a piece of paper and giving that to the patient to swallow. He says that the extracts on the market have as high a degree of potency as any that it is possible to produce. This is, of course, an unwarranted assumption, for in the case of those extracts for which a test of activity has been found, and a correct method of extraction discovered, it frequently happens that some slight error in extraction may result in an inactive preparation being produced; this can occur, for example, with insulin and with extract of the posterior lobe of the pituitary. Obviously, when there is no reliable test for the activity of extracts, it is impossible even to know which is the best method of preparation, and the odds against such preparations having any activity whatever are very heavy.

Insulin in Diabetes.—In a detailed study made by Spriggs and others of a moderately severe case of diabetes in which tolerance had been diminishing for the last three years, it was found that with the help of two daily hypodermic injections of insulin, on a measured diet, the excess of sugar in the blood, the sugar in the urine and the acidosis could be controlled; also that the patient could take more than double the amount of food he had previously been able to take without the appearance of sugar in the urine. Regulation of diet is still needed, for if an excess of food was taken above the new and higher level of tolerance, the hyperglycemia, glycosuria and acidosis reappeared. The treatment led to improvement in nutrition, physical capacity, and mental outlook.

Calcutta Medical Journal

17: 193-240 (May) 1923

Clinical Study of Cerebrospinal Fluid. B. B. Shaha.—p. 193.
Main Principles of Cardiologic Practice. S. C. Bose.—p. 208.
Two Cases of Anemia Suggesting Endocrine Deficiency. J. Maitra.—p. 219.

Japan Medical World, Tokyo

3: 1-18 (Jan. 15) 1923

*Experimental Studies on Process of Vaccinal Immunity. T. Ohtawara.—p. 1.
Cholera Bacteriemia and Appearance of Vibrion in Bile. S. Mashimo.—p. 10.

Vaccinal Immunity.—Ohtawara maintains that vaccinal immunity is an active histogenous immunity of the body as a whole. The immune bodies in the blood are produced by the tissue cells of various organs as a reaction to the virus.

Journal of Obstetrics and Gynæcology of the British Empire, Manchester

30: 117-328 (Summer) 1923

Intrinsic Dysmenorrhea. I. Natural History. II. Clinical Aspects. Analysis of 400 Cases. W. B. Bell.—p. 119.
*Primary Chorionepithelioma of Fallopian Tube. B. Solomons and E. C. Smith.—p. 162.
*Heart Disease in Pregnancy. A. L. Robinson.—p. 172.
*Investigation of Constancy of Chemical Composition of Blood During Pregnancy. E. C. P. Williams.—p. 189.
Two Cases of Cancer of Body of Uterus with Secondary Growths in Vulva and Vagina Free from Recurrence Five and Four Years After Hysterectomy. H. Spencer.—p. 197.
Congenital Deformity of Posterior Lip of Cervix. H. R. Spencer.—p. 202.
*Papillary Adenocarcinoma of Ovary, with Permeation of Great Vessels of Heart. H. J. C. Gibson and G. M. Findlay.—p. 204.
Three Cases of Contraction Ring Dystocia. G. FitzGibbon.—p. 208.
Cervical Fibroid Showing Vein Opening into Cervical Canal. B. Whitehouse.—p. 211.
*Endometrial Adenoma of Abdominal Wall Following Ventrisuspension of Uterus. C. D. Lochrane.—p. 213.
Carcinoma of Female Urethra: Two Cases Treated with Radium.—p. 215.
Case of Calcified Bodies in Uterine Cavity. H. L. Murray.—p. 220.
Case of Strangulation of Normal Fallopian Tube and Ovary. H. L. Murray.—p. 222.
Adenomyoma Involving the Vermiform Appendix. D. Dougal.—p. 224.

Primary Chorionepithelioma of Fallopian Tube.—Solomons and Smith relate the case of a woman, aged 40, seen by them because of continuous hemorrhage since her last menstruation which had started three weeks before. She also complained of anorexia, wasting and great thirst. She was suffering from profound anemia, was wasted and slightly cachectic. Gynecologic examination revealed a small tumor on the anterior vaginal wall about two inches from the vulva. It was the size of a hazelnut and the color of claret. From the appearance of the vaginal tumor a diagnosis of chorionepithelioma was made, and it was removed. After a mesial suprapubic incision, a tumor, evidently of the same nature as the vaginal growth, was evident. It occupied a large part of the left side of the true pelvis. The tube and ovary could not be discriminated; it was close to the left cornu of the uterus and was extremely adherent to the surrounding intestines. A supravaginal hysterectomy with removal of the mass in the left side and of the tube and ovary of the right side was done. The cause of the chorionepithelioma in this case is doubtful.

Heart Disease in Pregnancy.—Apart from childbirth, many heart lesions are naturally progressive, the sclerosing process may appear to be stationary, but endocarditis is only too likely to recur and light up fresh mischief, for which the cardiologist has no remedy. Robinson urges that repeated pregnancies must, therefore, be forbidden to women with heart disease, and if other methods prove unsuccessful, surgical sterilization should be advised in selected cases.

Blood Chemistry During Pregnancy.—In about thirty cases of normal pregnancy in which the blood chemistry was studied by Williams, the average figures during the whole term of pregnancy were found to be: nonprotein nitrogen, 25.2 mg. per hundred cubic centimeters of blood; urea, 19.5 mg. per hundred cubic centimeters of blood; giving a ratio (urea nitrogen to nonprotein nitrogen) of 34.8. When the figures were averaged for the successive months of pregnancy, it was found that the urea gradually dropped until it reached the lowest value (16 and 17 mg. per cent.) in the fifth and sixth months, and then rose again until term, when the average was 21.9 mg. per cent., and within ten days of confinement the urea had returned to the normal nonpregnant average of 27.2 mg. per cent. The average values for the nonprotein nitrogen do not follow the curve, but remain approximately at the level value of 25 mg. per cent. The ratio of the urea nitrogen to the nonprotein nitrogen, therefore, follows the same curve as the urea, and is lowest in the fifth and sixth months.

Papillary Adenocarcinoma of Ovary and Heart Vessels.—In all previously reported cases of this sort, the primary tumor permeated the vessels directly. In the case cited by Gibson and Findlay the permeation was due to an extension from a secondary growth in the skin, the primary ovarian growth showing no evidence of vascular permeation.

Endometrial Adenoma of Abdominal Wall.—Three years after an operation for "displacement of the womb" Lochrane's patient first noticed a lump in the operation wound site. This lump had been getting bigger gradually, and became sore and tender about the time of menstruation. At operation a diffuse fibrous looking mass, irregularly circumscribed, but with ill defined margins, lay under the right rectus fascia, on, and internal to, the rectus muscle, but not definitely in the substance of the latter. Its position corresponded to the site of the operation wound in the lower middle quarter of the subumbilical rectus. It was apparently shut off from the peritoneal cavity by peritoneum only. On gross section the tumor was irregularly honeycombed with small cystic spaces varying in size from a pinhead to a pea. These spaces all contained thick, dark, menstrual-like fluid. The tumor was moderately vascular. The remains of two or three old catgut sutures were found in the midst of the mass. Microscopic sections of the tumor showed very numerous gland spaces lined with typical endometrial epithelium. The condition

appears to be the result of an implantation of endometrial tissue in the abdominal wall during the operation of ventrisuspension. Whether the tissue was carried there in the too deep passage of the suspending sutures through the uterus, or whether it escaped through the fallopian tubes, or from similar areas in the right ovary into the raw area of the abdominal wall Lochrane does not say. The probability is, however, that it was carried on the catgut sutures.

Lancet, London

2: 53-104 (July 14) 1923

Surgery of Thyroid. A. J. Walton.—p. 53.
Insurance Practice. Review with Certain Criticisms and Constructive Proposals. A. Garvie.—p. 60.
*Cause of Death in Intestinal Obstruction. S. Pringle.—p. 62.
*Case of Inspiratory Apnea in New-Born Infant. W. D. Kirkwood and B. Myers.—p. 65.
Mode of Transmission of Malaria, by Coccidia: Hypothesis Advanced by Richard Pfeiffer in 1892. C. M. Wenyon.—p. 68.
Provision for Expiration in Endotracheal Insufflation Anesthesia. I. W. Magill.—p. 68.
Acute Ketosis During Pregnancy. J. H. Robinson.—p. 69.
Bronzed Diabetes: Failure to React to Dietetic and Insulin Treatment. E. B. Leech.—p. 69.

Cause of Death in Intestinal Obstruction.—Pringle is of the opinion that experimental work justifies the conclusion that the principal factor in causing death in intestinal obstruction is a toxin which is developed chiefly in the duodenum, and, although not absorbed from the normal intestine, is absorbed under the conditions which prevail in obstruction. The exact mode of production of the toxin is also undecided, but probably the presence of pancreatic secretion, and, in a lesser degree, the activities of bacteria are necessary for its production. While the duodenum is the site of maximum toxicity in obstruction, yet the poisonous substances are developed lower down in the intestine, and it is probable that in the production of these toxins bacterial action plays an important rôle—a rôle which increases in importance the lower down the obstruction occurs. Pringle suggests that intestinal toxemia has a large share in causing death in acute septic peritonitis.

Primary Inspiratory Apnea in the New-Born.—The important points in the case cited by Kirkwood and Myers are: The mother was a healthy primipara, aged 25, who enjoyed excellent health during pregnancy and labor. The labor was comparatively easy and natural. No drugs were given except a few whiffs of chloroform just before the birth of the child. There was no similar case in the family. Cyanosis was present at birth, but passed off. There was no asphyxia neonatorum. The infant was well formed, showed no abnormalities, and looked healthy. It took its food well and passed meconium and urine without trouble. There were slight, although definite, changes noted in the infant within the first twenty-four hours. These gradually increased in intensity. Definite attacks of apnea occurred before the infant was 2 days old. Heart, lungs and air passages were normal. Twitchings occurred and then convulsions. The infant looked well and was of good color between attacks of apnea. The cyanosis was only present during attacks. Artificial respiration cut short the attacks. Death occurred within twelve hours of the first appearance of apnea. The total number of attacks was more than a dozen. The clinical symptoms suggested an affection of the respiratory center yet at the necropsy there was comparatively little evidence macroscopically. Microscopically, just above the level of the olivary bodies and constituting the lower 2 mm. of the pons, five or six small hemorrhages had occurred. The largest of these measured 2x15x1.25 mm. At its lower extremity it surrounded the apex of the right olive, and thence extended for 2 mm. upward, outward and backward toward the restiform body. This hemorrhage caused damage to the formatic reticularis, fillet, a small portion of the seventh nerve nucleus, and some fibers of the trapezium. A second extravasation of almost equal size was found in a nearly symmetrical situation on the left side. This hemorrhage would temporarily, at any rate, have the same effect as section of the brain stem just above the striae, and would determine the onset of the apneatic type of respiration, which is characterized by alternating periods of inspiratory tonus and gasping.

Medical Journal of Australia, Sydney

1: 627-654 (June 9) 1923

Infection in Cardiac Disease. W. N. Horsfall.—p. 627.
Radium Therapy for Malignant Disease. H. M. Moran.—p. 632.
Complement Fixation Test in Gonorrhea. N. M. Gibson.—p. 635.
Mastoidal Disease with Lateral Sinus Infection. H. M. Jay.—p. 638.

1: 655-686 (June 16) 1923

Leukocytes in Health and in Disease. K. D. Fairley.—p. 655.

Sei-I-Kwai Medical Journal, Tokyo

42: 1-19 (June) 1923

*Effect of Chloroform Narcosis on Growth of Transplanted Animal Tumors. T. Kimura, K. Ohba and Y. Wada.—p. 1.
Excitatory Process of Respiratory Center. K. Tugane.—p. 4.
Multiple Cholangiectatic Cyst Formation in Liver. Three Cases. K. Sonobe.—p. 17.
*Review of Serum Diagnosis Complement Deviation Method for Tuberculosis. Y. Nishida.—p. 19.

Effect of Chloroform Narcosis on Tumor Growth.—No marked stimulating effects on the growth of inoculated tumors were recognized by Kimura et al. in animals which were repeatedly anesthetized or surgically operated on under chloroform anesthesia.

Complement Deviation Test for Tuberculosis.—Nishida believes that the complement deviation test with a fine antigen (as Petroff's glycerin extract) may be of distinct aid in the diagnosis of early tuberculosis and in the detection of the disease when the condition is obscure.

Bulletin de l'Académie de Médecine, Paris

89: 651-677 (June 19) 1923

*Preventive Protein Therapy. F. Arloing and L. Langeron.—p. 658.
Training of Midwives. C. Jeannin.—p. 660.
*The Leukocyte Formula of the "Gassed." Dupont and Delater.—p. 663.
*Surgical Treatment of Rhizomelic Spondylosis. P. Peugniez.—p. 674.

Temporary Local Immunity Conferred by Parenteral Injection of Protein.—Arloing and Langeron found that guinea-pigs injected subcutaneously with serum, casein or peptone, alone or associated, succumbed like the controls to intraperitoneal inoculation with the pyocyaneus. If the protein injection was made into the peritoneum, instead of subcutaneously, all the animals survived. The success of this preventive polyprotein therapy can be explained only by assuming that it induces a local immunity. It throws light on the local effect of vaccination, as in vaccination by the mouth against typhoid, or the administration of peptone in alimentary anaphylaxis: The epithelium of the intestine becomes resistant to the local action of the toxin involved.

The Leukocyte Count in the Gassed.—The findings are recorded during spa treatment at Mont-Dore in seventeen gassed soldiers with pulmonary sequelae.

Surgical Treatment of Rhizomelic Spondylosis.—Two years had elapsed in Peugniez' case since the last pains, and the ankylosis was so extreme that the man, aged 37, had to be lifted as an inert block, and was unable to sit down. Subtrochanteric osteotomy of both hip joints restored him to a comparatively active, self-supporting life.

Bulletins de la Société Médicale des Hôpitaux, Paris

47: 865-936 (June 15) 1923

*Uteroplacental Nitritoid Crisis. M. Gougerot.—p. 865.
*Artificial Pneumothorax for Interlobar Pleurisy. J. Troisier and R. Gayet.—p. 867.
Varicella During Herpes Zoster. A. Netter and Vallat.—p. 874.
*Iodin in Treatment of Chronic Articular Rheumatism. J. Thiroloix, Brace-Gillot and Harmelin.—p. 877.
*Mercurial Poisoning: Two Cases. Vialard and Baril.—p. 907.
Meningeal Hemorrhage of Spinal Origin. J. Huber and J. de Massary.—p. 916.
Paget's Disease of the Bones with Paraplegia. Ardin-Delteil et al.—p. 920.
Hemibulbar Syndrome. Ardin-Delteil, Leblanc and Azoulay.—p. 924.
Phenolsulphonephthalein Test of Senile Kidney. Merklen et al.—p. 929.
Case of Incipient Neurosyphilis. Lortat-Jacob and L. Béthoux.—p. 934.

Nitritoid Shock of the Uterus Under Arsenical Treatment.—Gougerot in two cases ascribes to nitritoid shock from intravenous injection of the drug the headache, sensation of heat in the abdomen, immediate contraction of the uterus, with slight hemorrhage, and the expulsion of a living child.

Artificial Pneumothorax in Suppurating Interlobar Pleurisy.—A man aged 65 was in a very grave condition at the end

of six weeks from the onset of pneumonia, but improvement progressed to clinical recovery in five weeks after therapeutic pneumothorax had been induced. Troisier and Gayet cite this case to sustain their plea that the indications for artificial pneumothorax should be broadened to include suppuration after pneumonia, with or without interlobar extension, after, but not before, the pus has made an opening into a bronchus.

Iodin in Treatment of Chronic Articular Rheumatism.—Four years of experience and thirty-four cases are analyzed in detail, and the systematic prolonged daily administration of from 0.21 to 0.63 gm. of pure iodin is recommended. Notable improvement or a cure was manifest in 83 per cent. The drug was given by mouth or parenterally, as a methyl or benzyl salt of iodin, with hexamethylenamin.

Mercurial Poisoning.—Of two men, one treated by nephrotomy in addition to the other measures, died; the other man recovered. Intravenous injections of a hypertonic solution with subcutaneous and rectal injections of an isotonic solution of glucose in large doses were employed.

Lyon Chirurgical

20: 129-292 (April) 1923

*Intraspinal Tumors. Bériel, J. Branche, A. Devic, Viret and P. Wertheimer.—p. 129. Cont'd.
Symmetrical Cysts in Lower Jaw. A. Rendu and C. Dunet.—p. 222.
*Vaccine Therapy in Puerperal Infection. Voron et al.—p. 227.

Intraspinal Tumors.—Bériel and Viret discuss, with illustrations, two cases of polyneuromas which show that the nervous tumor spread exclusively by nerve tissue, and lingered for years in the spinal roots before entering the spine. When it invaded the spine, it affected only the intradural tissue in the free space between the bifurcation of the two roots, and could easily have been shelled out. The mother tumor in the root could have been excised, and thus have forestalled the invasion of the spine. Neuromatous bunches in the neck had been noted for thirteen years in one of these cases. In the other, the right arm had been weak since childhood.

Bériel and Wertheimer explain that mestastasis in the spine of cancers or hydatid cysts in viscera, bones, etc., is almost invariably extradural. One woman, aged 54, with paraplegia after a year of vague motor symptoms, recovered after the removal of an extradural tumor in the dorsal spine; it proved to be thyroid tissue. When the metastasis induces pachymeningitis, operative measures are generally contraindicated, but under other conditions they should be considered. The intraspinal metastasis may be long in developing; in one woman, aged 46, there was a destructive process in vertebrae from metastasis after mammectomy for cancer, but the paralysis was the work of a circumscribed extradural nodule.

Complications of Intraspinal Tumors.—Besides the symptoms from compression, Devic and Wertheimer analyze the anatomic complications in cord, meninges or vertebrae, and multiple tumors. In Claude's case there was paraplegia at 17, then fatal recurrence after a remission for five years. Necropsy revealed six intraspinal sarcomas.

Vaccine Therapy in Puerperal Fever.—In twelve cases given autogenous vaccine treatment, the lack of benefit in four cases was explained by advanced endocarditis or other cause. One woman with grave septicemia recovered on the eleventh day after phlebitis had developed. The vaccine therapy had been begun on the sixth day. In this and in seven other cases, the vaccine treatment seemed to extinguish the foci of phlebitis and to hasten convalescence. Two of the women had presented eclampsia and the infection in all had previously displayed a tendency to waves of exacerbation. In two other cases the infection did not seem grave enough to call for vaccine therapy, but the recurring phlebitis and protracted course were in marked contrast to the vaccine treated cases. Stock vaccines proved unreliable. Although the streptococcus often seems to sensitize the organism during the height of puerperal infection and prevent any response to vaccine therapy, the vaccine may prove a potent aid when the organism starts to rally its defensive forces.

Néoplasmes, Paris

2: 97-144 (May-June) 1923

*Origin of Cancer. A. Lumière.—p. 97.
*Cancer. A. Sartory and Scheffler.—p. 108.
*Present Status of Treatment of Cancer. Delbet and Thomas.—p. 119.

Origin of Cancer.—Lumière recalls that cancers develop in regions exposed to traumatism from without or within, or in organs which undergo periodical fluctuations in size. The structure of the resulting cicatrix is so compact that the blood cannot circulate freely through it, and it is thus cut off from the vital fluids, and the cells lose their differentiated structure and revert to a more embryonal type. Cancer does not develop in the cicatrix until it has lasted a long time, and until it undergoes some trauma which allows influx of the vital juices into the cicatrix. When this occurs, the cells which, in becoming retrogressively undifferentiated have acquired the exceptional faculty for growth of all embryonal tissue, begin to proliferate, and cancer results. Prophylaxis consists in warding off diseases and injuries liable to induce cicatricial changes in the skin, alimentary tract and elsewhere. After the cicatrix has developed, the aim must be to protect it against trauma.

Cancer.—Sartory and Scheffler found the plasm demineralized in cases of cancer, the leukocytes unusually large and numerous, with low proportion of lymphocytes, and excessive eosinophilia. Robin has noted low oxyhemoglobin and low erythrocyte count, while the corpuscles are unusually large. Emotional strain, by its action on the sympathetic system, seems to predispose to cancer; never have there been so many cases in France as since the war. The contagion in cancer houses may possibly be explained by a water supply that lacks minerals. Cristol's research has demonstrated an exceptional proportion of zinc in cancer tissue. The largest proportion he found in the normal uterus in his extensive research was 0.367 per thousand ash, while in the cancerous uterus it was 0.794. The longer the duration of the tumor, the more zinc. Robin's research also indicates that a deficiency of silica also predisposes to cancer. We know that the cancer age corresponds to declining function in the thyroid and genital glands, and loss of the thymus. The practical conclusions are that administration of silica and organ therapy might combat the evolution of a cancer, or prevent recurrence.

Present Status of Treatment of Cancer.—In concluding this review, Delbet and Thomas reiterate that the treatment of malignant disease has to be multiple. Adjuvant serotherapy and vaccine therapy offer a broad and promising field for research.

Paris Médical

13: 477-508 (June 2) 1923

*Infectious Diseases in 1923. C. Dopter.—p. 477.
The Schick Reaction. P. Lereboullet and P. Joannon.—p. 486.
Typhoid and Paratyphoid Jaundice. E. Sacquépée.—p. 494.
Primary Pneumococcus Sepsis. L. Izard.—p. 501.
*Typhoid Nephritis. J. Chalier and R. Desjacques.—p. 503.
*Convalescents' Serum in Prevention of Measles. C. Dopter.—p. 504.
Protracted Pneumococcus Infection in Infants. P. Blamoutier.—p. 508.

Infectious Diseases in 1923.—Dopter's review of the literature of the year mentions the success of protein therapy after failure of other measures in a few cases of meningococcus septicemia. When even this failed, Netter, at the hundred and third day of the disease, injected pus from an aseptic abscess induced in a horse with turpentine, and the patient recovered. An interesting finding in recent months is Bordas' discovery of healthy carriers of plague bacilli among rats. Where plague has once prevailed, these healthy carriers serve as a reservoir of the virus between epidemics. Blanchard's discovery of a special spirochete in the blood during blackwater fever is also significant. It reproduced hematuria, and not jaundice, in animals. Spirochetes have also been found recently in the spinal fluid in multiple sclerosis, but only intermittently.

Typhoid Nephritis.—In the young woman, the paratyphoid B infection had suggested ordinary typhoid until, in the second week, edema and tachycardia developed, with tube-casts. Complete recovery followed.

Convalescents' Serum in Prevention of Measles.—Dopter remarks that if this method of prophylaxis continues to justify the hopes now based on it, systematic arrangements must be made to collect the serum and distribute it to institutions threatened with an epidemic.

Revue Française d'Endocrinologie, Paris

1: 97-184 (May) 1923

*Hyperthyroidism. M. Labbé.—p. 97.
*Endocrine Glands and Deficiency Diseases. G. Mouriquand et al.—p. 109.
*Evolution of Hormones. L. Hallion.—p. 137.
*Blood Production in the Pituitary. R. Collin.—p. 147.
*Thyroid Treatment Regulates Diuresis. R. Porak et al.—p. 159.

The Diagnosis of Excessive Functioning of the Thyroid.—Labbé comments that the epinephrin test and the basal metabolism findings are not only indispensable, in atypical cases, for the diagnosis, but for oversight of the effect of treatment and the prognosis.

Endocrine Glands and Deficiency Syndromes.—Mouriquand, Michel and Sanyas found that deficiency diseases developed in their ninety-two guinea-pigs earlier and more pronounced when they were given thyroid extract. No effect in this line was observed from epinephrin, even when kept up for 240 days.

Evolution of Endocrine System.—Hallion discusses the evolution of the local secretions from the general circulating medium, the blood. Each organ has its own special fluid medium, and this relative autonomy of the local mediums explains many facts in physiology and therapeutics.

Blood Production in the Pituitary.—Collin presents new experimental evidence in this line. It suggests, he says, that part of the red corpuscles in the blood may originate from transformation of the glandular cells in the hypophysis cerebri.

Action of Endocrine Extracts on Diuresis.—The beriberi polyneuritis in the boy, aged 12, was accompanied with evidences of deficient functioning of the sympathetic nervous system, and scanty production of urine. Under thyroid treatment, the sympathetic system seemed to be restored to normal and, with this, normal diuresis returned. Porak and his co-workers ascribe this to improvement of the nutrition in general by the thyroid treatment, rather than to any direct action on the sympathetic nerve.

Schweizerische medizinische Wochenschrift, Basel

53: 461-484 (May 10) 1923

*Epidemic of Smallpox in Zurich in 1921-1923. Naegeli.—p. 461. Idem. O. Leuch.—p. 461.
Gummatous Meningitis with Persisting Central Scotoma. Strebel.—p. 467.
A Warming Apparatus for Drip Enemas. H. Koller-Aeby.—p. 469.
Chorea Major in Switzerland in Former Centuries. Martin.—p. 470.

Epidemic of Smallpox in Zurich in 1921-1923.—Naegeli saw only one death, in a new-born child, among 1,400 cases of the recent epidemic of smallpox in Zurich. He believes that it is a special variety of smallpox, similar to those observed in America (white pox) and England (alastrim). The mortality of the usual form of smallpox in the neighboring canton Basel was at the same time about 15 per cent.

Clinical Picture of a Benign Epidemic of Smallpox in Canton of Zurich in 1921-1923.—Leuch describes the symptoms of this disease. It starts suddenly, with chill and high temperature (38 to 40 C.). Pains in the back were present in two thirds of the cases. The temperature becomes normal after two or three days, and the eruption, which resembles varioloid, starts after one or more days of a free interval. The pustules develop in one to four days and last three or four days. The whole content of the pustule usually empties after one puncture. The disease is very benign.

Riforma Medica, Naples

39: 553-576 (June 11) 1923

Share of Reticulated Tissue in Blood Production in Leukemia. D. Reitano.—p. 553.
Subcutaneous Rupture of Three Tendons. G. M. Fasiani.—p. 557.
Typhoid Simulating Acute Appendicitis. F. de Gironcoli.—p. 559.
Connection Between Influenza and Appendicitis. M. Gioseffi.—p. 561.
Diagnosis of Visceritis and Perivisceritis Below the Liver. G. Castronuovo.—p. 562.

39: 577-600 (June 18) 1923

Phlegmonous Gastritis Secondary to Cancer. A. Businco.—p. 577.
Behavior of Right Atrium in Vagotonia. S. Mongini.—p. 580.
*Sign of Sclerosis of Aorta. C. Trunecceck.—p. 581.
Main Points for Diagnosis of Gastric Ulcer. G. Carisi.—p. 584.

Sign of Arteriosclerosis of the Thoracic Aorta.—Trunececk recalls that normally there is no arterial pulse in the supraclavicular fossa. When pulsation is perceptible and the wave in the subclavian can be traced to the axilla, with unusual dulness over the aorta and to the right of the sternum, and the second aortic sound is exaggerated and metallic, there is sclerosis and dilatation of the thoracic aorta. This abrupt "sclerotic shock" as he calls it, may be bilateral. The jugular venous pulse is entirely different; it is longitudinal, becomes imperceptible with respiration, is sluggish, and the tension is low. With exophthalmic goiter, the pulse is equally perceptible in all the peripheral arteries. An aneurysm and a pericardial effusion can usually be recognized by the symptoms due to compression. The peculiarities of the "sclerotic shock" may be felt in other peripheral arteries when the blood stream passes from a rigid into a still elastic segment of the artery.

Rivista Critica di Clinica Medica, Florence

24: 49-64 (Feb. 5) 1923

*Bilirubin in Infectious Jaundice. A. Bolaffi.—p. 49.
*Alimentary Colloidal Shock. I. Spadolini.—p. 54.

Bilirubinemia in Infectious Jaundice.—Bolaffi reports three cases of catarrhal jaundice with necropsy in one, in which the prompt direct reaction with Hijman van den Bergh's test conflicted with his theory as to its interpretation.

Hemoclastic Crisis and Anaphylactic Shock After Experimental Lesions of Mesenteric Nerves.—Spadolini's research on the pathogenesis of dystrophia, of alimentary origin, seems to establish that the mesenteric plexuses are the normal protecting barrier against anaphylactic sensitization of alimentary origin.

Rivista di Clinica Pediatrica, Florence

21: 193-256 (April 24) 1923

*Oxydases. G. Righi.—p. 193.
Interlobar Empyema After Pneumonia. R. Mancinelli.—p. 218.
Clinical Importance of Vegetative Nervous System. Pollitzer.—p. 230.

Contribution to the Study of Oxydases.—Righi studied in different infectious diseases the leukocytes containing oxydases. He found that sometimes the clinical symptoms or complications are preceded by an increase of oxydases. During the course of the disease the amount of these granules decreases notably. They reappear during convalescence.

Archivos Españoles de Pediatría, Madrid

7: 193-256 (April) 1923

*Achondroplasia. A. Martinez Vargas.—p. 193.
Intertrigo in Children. J. Fernandez de la Portilla.—p. 222.

Achondroplasia.—Martínez Vargas has published two preceding studies of achondroplasia since 1900, and he here gives eleven illustrations of a number of new typical cases, and reviews international literature on the subject. The data all confirm his view that it is a kind of physiologic mutation. The tissue involved is the epiphyseal cartilage, although some of the endocrine glands may show anomalies. The achondroplasia has finished its evolution by the time the child is born, and treatment seems to be futile.

Prensa Médica Argentina, Buenos Aires

9: 1005-1028 (May 20) 1923

*Inherited Syphilis in Gynecology. E. Nicholson.—p. 1005.
*Cholesterol Metabolism. J. Palacio.—p. 1014.
An Epidemic of "Fourth Disease." A. B. Ribeyrolles.—p. 1017.

Inherited Syphilis in Gynecology.—Nicholson has encountered a number of cases in which a gynecologic affection that had long resisted treatment of all other kinds, including repeated curettage, subsided under tentative treatment as for syphilis. He refers in particular to menorrhagia and metrorrhagia in virgins, uterine fibromyomas and endocrine derangement, reporting a number of typical cases of each class. The parents, the brothers and sisters, may first give the clue, and the success of specific treatment, even as late as the menopause, will disclose the syphilitic element. One girl of 17

with pains in the epigastrium, dysmenorrhea, and symptoms of irritable heart was restored to normal by a month of mercury and iodid; the father's ataxia had given the clue in this case. In one woman, aged 32, the complete success of mercury and thyroid treatment sustained his diagnosis of menorrhagia from thyroid insufficiency in inherited syphilis.

Metabolism of Cholesterol.—Palacio reports inconclusive findings in regard to the effect on the cholesterol content of the blood in ten rats before and after removal of both suprarenals.

Revista Médica del Rosario, Argentina

13: 89-153 (April) 1923

*Congenital Stenosis of the Pylorus. A. Zeno and C. Muniagurria.—p. 89.
*Chronic Appendicitis in Children. J. M. Maidágan.—p. 103.
*Acquired Hydrocephalus. T. Fracassi.—p. 113.
*Bile in the Peritoneum. D. Staffieri.—p. 121.

Congenital Stenosis of the Hypertrophic Pylorus.—The present status of operative treatment is reviewed, and a successful case reported.

Chronic Appendicitis in Children.—Maidágan protests against the frequent statements in regard to the "abuse of appendectomy." He affirms that the appendix in children is not removed as often as it should be. Chronic insidious appendicitis is rare in very young children, but after 4 it is a frequent sequela of acute infections and eruptive diseases. Cyclic vomiting, with or without acetone, never returned after removal of the appendix in his cases. Severe dyspepsia seldom occurs in children between 6 and 8 without being traceable to chronic appendicitis.

Acquired Hydrocephalus.—The hydrocephalus developed in the young man four years after a contusion of the chest. Frontal headache and impairment of vision of sudden onset, with normal spinal fluid, called for a decompression operation, which was followed by gradual improvement. In a second case similar improvement was realized, but vision had been lost when the girl, aged 12, was first seen.

Bile in the Peritoneum.—Staffieri had two cases nearly at the same time; in one a hydatid cyst in the liver had been ruptured in a contusion. In the other case symptoms of old gallstone disturbances and mild infection in the biliary apparatus suggested that the choleperitoneum had occurred without perforation.

Revista Médica del Uruguay, Montevideo

26: 189-228 (May) 1923

Hemiplegia of Adult Type in Two Children. J. Bonaba.—p. 189.
Nipiology. Ernesto Cacace.—p. 194.
*Cyanosis in Whooping Cough. M. A. Jaureguy.—p. 207.
*Preventive Treatment of Syphilis. J. May.—p. 213.
Peritonitis in Course of Typhoid. J. L. Vera.—p. 216.
*Bilateral Suppurative Parotitis in Young Infant. L. Volonté.—p. 220.

Cyanosis in Whooping Cough.—Jaureguy describes three cases, from a recent epidemic of whooping cough, in which the children developed fever, dyspnea and intense cyanosis that were speedily fatal. Tuberculous lesions were evident, and it is known that in whooping cough the organism is unable to respond to the tuberculin test. This negative phase allows the tubercle bacilli free play, and they may rapidly invade the pericardium or other organs, when the paroxysms of coughing shake up the organs in which they are already lurking, or open the portal to new invasion.

Preventive Treatment of Syphilis.—May comments on a case of professional syphilis acquired in delivering a syphilitic woman. The physician disinfected his hands with great care and a syphilologist cauterized an erosion, but syphilis developed and ran the usual course. Prompt preventive treatment would have averted it. This was proved in two other physicians given preventive treatment at once after the eye had been contaminated with syphilitic saliva or the finger cut in puncturing a chancre. Preventive treatment is justified, May says, only when syphilis is absolutely certain in the person suspected of the contagion. The preventive treatment can be milder the briefer the interval after the contact.

Bilateral Parotitis in Recently Born Infant.—The infant had thrush, and the suppurative parotitis required incision; recovery was complete in a month.

Semana Médica, Buenos Aires

1: 1109-1148 (June 14) 1923

*Aneurysm of Common Carotid. R. A. Bullrich and S. Viggiano.—p. 1109.
Medicolegal Testimony in Case of Impotency. C. L. García et al.—p. 1115.
Polymorphous Bacterium Found in Whooping Cough. J. Melfi.—p. 1125.
Fractures of the Humerus. C. Pasquini López.—p. 1128.
Infant Feeding, Growth and Nutritional Disturbances. J. C. Navarro and Florencio Bazán.—p. 1134.

Aneurysm of Common Carotid.—The man, aged 44, presented aortic insufficiency as well as a fusiform aneurysm of the right common carotid and a four plus Wassermann reaction. The accessibility of the entire aneurysm allowed instructive electrocardiographic study of the diseased carotid and its sound mate. Hill's sign of aortic insufficiency was pronounced.

Siglo Médico, Madrid

71: 525-548 (June 2) 1923

*Means to Induce Premature Delivery. Parache.—p. 525.
Bismuth Preparations in Ophthalmology. M. Marín Amat.—p. 528. Cont'd.
Nondisfiguring Surgery of the Skin. V. Gimeno y Rodríguez Jaén.—p. 532. Cont'n.
Traumatism of Skull and Brain. V. Fidalgo Tato.—p. 534. Cont'n.

Means to Induce Premature Delivery.—Parache has been much impressed with the smooth and apparently normal delivery when he ruptured the membranes and, four hours later, injected pituitary extract. For five years this has been his practice when conditions required immediate premature evacuation of the uterus (60 cases). As term approaches, the uterus is sensitized, so that rupture of the membranes starts the birth process, and pituitary extract reenforces the natural powers. He warns that if uterine contractions do not appear, or grow weaker, this testifies that the uterus is not sensitized, and the injection should not be repeated.

Deutsche Zeitschrift für Chirurgie, Leipzig

178: 289-426 (April) 1923

*Research on Kidneys in Parabiosis. A. Hermannsdorfer.—p. 289.
Ascarids from Surgical Standpoint. O. Hürzeler.—p. 393.
*Intermittent Peritonitis with Adhesions. F. Kempf.—p. 402.
Etiology of Spontaneous Extensive Hemorrhage in Bed of Kidney. K. Grasmann.—p. 416.
*Primary Sarcoma in the Liver. A. Candea.—p. 423.

Research on the Kidneys in Parabiosis.—The extensive experimental research here reported has confirmed that from 66 to 75 per cent. of the pairs of rats joined together present evidence of severe toxic action. It seems to be a constant internal, reciprocal, biochemical, toxic influence. Cachexia and shifting of the blood picture are the principal manifestations. Urine from the parabiosis rats, injected into the peritoneum of a healthy single rat, may cause convulsions, fatal in a few minutes. Among the conclusions suggested by these experiences is that eclampsia in the pregnant and uremia with convulsions are the results of a toxic disturbance of the total metabolism by production of a toxin in the kidneys, with absorption of the toxin into the blood stream. Extrarenal and renal pathologic conditions cooperate to produce the clinical picture.

Intermittent Adhesive Peritonitis.—Kempf does not hesitate to apply the term malignant to the peritonitis to which he refers. No mechanical or chemical irritation or other local cause has been discovered, and operative measures to break up the adhesions are futile, as new adhesions soon form. Kempf is convinced that bacteria are a factor in this chronic progressive affection, with its acute exacerbations. In a typical case, as a last resort, he detached the adhesions and poured liquefied fat into the abdominal cavity. The fat was taken from the patient's thigh and seemed to have answered the desired purpose to a certain extent, although the man died in collapse three days later from peritonitis. He ascribes the peritonitis to irritation from the albumin left in the fat; he had noticed white specks in the fluid fat at the time. In a future case he proposes to extract the auto-fat with ether before pouring it into the abdominal cavity. The fat must not touch the lips of the incision, as this would interfere with the healing of the wound. Moving the patient about would help to distribute the fluid fat over the desired surface. He used

100 gm. of liquid fat, but says that half of this would probably have been sufficient, as although fully 50 per cent. of the fat had escaped through the fistula, yet necropsy showed the entire peritoneum coated with the oily layer. To get 50 gm. of fluid fat, it would be necessary to have 100 or 150 gm. of solid fat, and it takes a day to prepare it.

Primary Sarcoma in the Liver.—In connection with resection of a small tumor in the liver of a young woman, Candea mentions a family in which three of the five children died within four years from sarcoma. The ages ranged from 19 to 23, and the tumors were in the stomach and liver, rib and tibia.

Jahrbuch für Kinderheilkunde, Berlin

101: 251-372 (April) 1923

*Congenital Syphilis. K. Kundratitz.—p. 251.
Essential Amino-Acids in Cow's and Human Milk. A. Mader.—p. 281.
*Biology of the Colon Bacillus in Dyspepsia. A. Adam.—p. 295.
*Pathology and Treatment of Nutritional Disturbances. Schaps.—p. 315.
*False Passage in Intubation. M. Hohlfeld.—p. 349.
*Psychic Inanition of Infants. E. Aschenheim.—p. 353.

Congenital Syphilis.—Kundratitz finds all the welfare work of little use in congenital syphilis as long as the parents are not compelled by law to allow regular treatment. The mortality of untreated syphilitic infants is between 24.2 and 66.6 per cent. The mortality of his treated cases was 4.7 per cent. An apparently permanent cure was obtained in 31.7 per cent. of infants. Pathologic findings were present in the cerebrospinal fluid in only 29 per cent. of forty-five infants tested.

Biology of the Colon Bacillus in Dyspepsia, and Its Relation to Pathogenesis and to Intoxication.—Adam finds that the food which causes or increases dyspepsia, acts favorably on the development of the colon bacillus. Food that cures dyspepsia, inhibits the growth of the colon bacillus.

The Treatment of Nutritional Disturbances in Infants.—Schaps claims that daily addition of 2 or 3 gm. of lactic acid (divided in five or six doses) arrests dyspepsia in a very few days, no matter whether fermentative or putrefactive. Severe habitual vomiting and nutritional intoxication disappear in a day, if 10 to 20 gm. of gelatin are given in a liter of water during the day.

False Passage in Intubation.—Hohlfeld four times observed a false passage among his 428 intubations. He concludes that even an expert must not use force in introducing the cannula.

Psychic Inanition of Infants.—Aschenheim finds that older infants are inhibited in their psychic and somatic development if left alone. Association with other infants or children is necessary, especially in institutions.

Medizinische Klinik, Berlin

19: 709-744 (May 27) 1923

*Primary Chronic Progressive Polyarthritis. E. Freund.—p. 709.
Necessity of Hygienic Survey of German Students. P. Kuhn and R. Fetscher.—p. 711.
So-Called Sexual Anesthesia of Women. A. Moll.—p. 714. Conc'n.
Syphilis of Bones. J. Weiss.—p. 716.
Mechanics of Incisions of Skin and of Scars. F. du Bois-Reymond.—p. 718.
Treatment of Bile Fistula. L. Nicolas.—p. 721.
*Hemorrhagic Diathesis After Blood Transfusion. H. Herrmann.—p. 722.
*Tropical Malaria in Germany. P. Neumann.—p. 723.
Calcium Treatment in Spasmophilia. K. Blühdorn.—p. 724.
*Seroreaction for Determination of Activity of Tuberculosis. L. Mátéfy.—p. 725.
Treatment of Eczema. Aufrecht.—p. 727.
Large Prolapses of Vagina. E. Runge.—p. 729.
Present Status of Treatment of Carcinoma. O. Strauss.—p. 730.

Treatment of Primary Chronic Progressive Polyarthritis.—Freund did not see permanent improvement of chronic arthritis after tonsillectomies. The transient improvements resemble the effects of protein treatment, and it is possible that they are due to resorption of proteids from the open wound. Carious teeth do not seem to have any significance. Notwithstanding this, diseased tonsils and teeth should be removed. Radium preparations give good results. Injections of milk and other proteins help sometimes, but the affection recurs frequently. Immobilization of the joints should be restricted to a minimum. Exercises are preferable; massage, especially in a warm bath, is to be recommended. Thermic treatment is overestimated.

Hemorrhagic Diathesis After Blood Transfusion.—Herrmann transfused 200 c.c. of citrated blood into a patient with anemia after septic abortion. The transfusion was immediately followed by severe subjective and objective disturbances and a hemorrhagic diathesis. The patient died.

Diagnosis and Treatment of Tropical Malaria in Germany.—Neumann points out that tropical malaria acquired in Germany may be without characteristic attacks of fever. Arsphenamin may cause death or a more severe progress in such cases.

Seroreaction for Determination of Activity of Tuberculosis.—Mátéfy mixes 0.2 c.c. of serum with 1 c.c. of a 0.05 per cent. solution of aluminum sulphate. He found that much larger flakes of globulin form in the serum from patients with severe tuberculosis than in other serums.

Monatsschrift für Geb. und Gynäkologie, Berlin

62: 119-240 (March) 1923

*Renal Diabetes in the Pregnant. H. Küstner.—p. 119.
Ovarian Pregnancy Carried to Term. K. Bõwing.—p. 127.
Results with Naegele and Kjelland Forceps. A. Hermstein.—p. 139.
Is Prophylactic Cesarean Section Justified with Contracted Pelvis? P. W. Siegel.—p. 147.
Rubin's Test for Patency of Tubes. E. Graff.—p. 159.
*Isolated Tuberculosis of the Portio. K. Neuwirth.—p. 163.
Primary Carcinoma of One Tube with Tuberculosis of Both Tubes. Stübler.—p. 173.
*Pregnancy with Rectal Cancer. K. Heil.—p. 179.
*Two Thousand Cancer Cases. F. Voltz.—p. 187.
*Roentgen Treatment of Menorrhagia. Scholten and F. Voltz.—p. 194.
Treatment of Inadequate Labor. B. Herzfeld.—p. 201.

Renal Diabetes in Pregnancy.—Küstner noted alimentary glycosuria—renal diabetes—in all of 125 pregnant women, and also in twenty of a group of twenty-two nonpregnant women a few days before the onset of menstruation. He reasoned from this that this "renal diabetes" must be traceable to the ovaries. This assumption was confirmed by research on rabbits. The permeability of the kidneys is exaggerated under the influence of the corpus luteum.

Isolated Tuberculosis of the Vaginal Portion of the Uterus.—The aspect suggested cancer, but the lesion healed over under local iodin treatment. The patient was a woman of 67, and her age contraindicated operative measures. Senile marasmus developed later and the tuberculous process flared up anew.

Rectal Cancer in the Pregnant.—Heil adds another case to the thirty-one on record. He delivered his patient by cesarean section, and seven weeks later resected the rectum—an abdominal-sacral total extirpation. The woman's general condition is now satisfactory. The case teaches anew the great importance of careful examination of the rectum at the first sign of trouble.

Two Thousand Cancer Cases.—Voltz analyzes from various standpoints 2,000 cancer cases in women in Döderlein's service in ten years. In 35 per cent. of the total the father or mother had died from cancer, and in 8 per cent. a brother or sister besides the parent; in 34 per cent. the father or mother had died from tuberculosis, and in 7 per cent. also some brother or sister.

Roentgen Irradiation of the Spleen in Treatment of Uterine Hemorrhage.—Scholten and Voltz report excellent results from roentgen exposures of the spleen in treatment of purely functional menorrhagia and metrorrhagia in twenty-seven cases. The patient lies on the right side; a field 10 by 15 cm. is exposed, with a 0.5 mm. zinc filter, and the dose is 24 per cent. of the erythema dose.

Monatsschrift für Kinderheilkunde, Leipzig

26: 97-208 (May) 1923

*Treatment of Epidemic Meningitis. K. Lewkowicz.—p. 97.
Deforming Juvenile Osteochondritis. W. Singer.—p. 123.
*Roentgenologic Examination of Enemas in Infants. R. Steinko.—p. 166.
Gaucher's Splenomegalia. T. Fahr and C. Stamm.—p. 169.
Extrasystoles in Children. Siemianowski and Cieszynski.—p. 175.

Treatment of Epidemic Meningitis with Sweating and Antiserum.—Lewkowicz finds that sweating has no certain effect in meningitis. It is dangerous, if serum treatment is neglected because of it. Intraspinal injections of serum suffice if the passage between the subarachnoidal space of the

spinal canal and the ventricles of the brain is free. Its action may last for two days. In other cases, direct injections into the ventricles of the brain are necessary.

Roentgenologic Examination of Enemas in Infants.—Steinko found that an enema, even as small as 50 c.c., stimulates reflexly peristalsis of the whole colon.

Münchener medizinische Wochenschrift, Munich

70: 521-552 (April 27) 1923

Treatment of Heart With Scilla and Quinidin. F. Kauffmann.—p. 521.
Indications for Artificial Abortion. H. Sellheim.—p. 524.
*Cerebrospinal Fluid in General Paralysis. Gennerich.—p. 525.
*The Wassermann Reaction. K. Eskuchen.—p. 527.
Specific Diagnosis in Surgical Tuberculosis. Friedrich.—p. 528.
Arteriosclerosis and Preceding Hypertension. H. Malten.—p. 530.
"Staining of Spirochetes." J. Schumacher.—p. 531.
*Tuberculosis and Capillaries. W. Hagen.—p. 532.
Fatal Botulism from Beans Sterilized by Weck Method Before Canning. Blum.—p. 533.
Rare Injury Demonstrating Tenacity of Tendons. Block.—p. 533.
Bilirubin Determination in Urine. K. Hoesch.—p. 534.
Von Moltke's Heart Disease. A. Herrmann.—p. 534.
*Occupational Lead Poisoning. L. Schwarz.—p. 535.
Diagnosis of Vague Feverish Conditions. A. Krecke.—p. 537.

Histologic Demonstration of Diffusion of Cerebrospinal Fluid in the Pia Mater and Nervous Tissue in General Paralysis.—Gennerich considers the diffusion of cerebrospinal fluid into the parenchyma of the central nervous system as the most important factor conditioning metasyphilis. He believes that the pia mater normally protects the central nervous system against the diffusion. If the membrane is injured by a chronic latent syphilitic meningitis, the fluid penetrates into the brain or spinal cord, and causes general paralysis or tabes. He infused in cadavers a solution of potassium ferrocyanid intraspinally, and was able to prove in general paralysis and tabes a penetration of the substance into the nervous tissue by treating sections with copper sulphate. He believes that these experiments prove his theory.

Frequency of Positive Wassermann Reaction in Cerebrospinal Fluid with Negative Reaction in Blood.—Eskuchen finds in 34 per cent. of his seronegative cases of syphilis of central nervous system (especially general paralysis) a positive Wassermann reaction in the cerebrospinal fluid.

Tuberculosis and Capillaries.—Hagen believes that the frequency of tuberculosis in spring and the exacerbations in pregnancy and menstruation are due to a dilatation of capillaries and fast blood stream, which he observed at these periods.

Report on Action of Lead in Printers Investigated at the Institute for Industrial Hygiene in Frankfort-on-the-Main.—Schwarz found only a small number of instances of lead poisoning among printers and machinists. He insists nevertheless on a semiannual routine examination, including blood smears and hematoporphyrin determination in the urine. The research included 274 persons whose trade required the handling of metallic lead in some form, and who had consulted a physician.

Wiener klinische Wochenschrift, Vienna

36: 321-338 (May 3) 1923

Diuresis in Children with Regard to the Water Content of Food. E. Nobel.—p. 321.
*Action of Lysozyme. O. Nakamura.—p. 322.
*Parenteral Injections of Milk in Internal Disease. Högler and Seidel.—p. 323.
*Oral Râles. A. Schick.—p. 325.
*Bacteriuria as Cause of Vulvitis. Bucura.—p. 326.
*Abdominal Stasis. L. Hess.—p. 327. Conc'n.
Private Practice and Competition of Hospitals. Holzknecht.—p. 330.

Actions of Lysozyme.—Nakamura confirms, generally, Fleming's investigations on the lytic action of tears on some sarcinae. The tears may be active even in a dilution of 1:100,000, and are comparatively resistant to heat. They act also on dead micro-organisms, and do not lose their activity by use. N/8,000 acid enhances the effect. Acids which are stronger than N/2,000 inhibit it, but overneutralization by alkali is followed by a quick dissolution of the germs, even if the amount of tears originally added would not have been sufficient to obtain it. [An editorial on "Bacteriolytic Tears" appeared in THE JOURNAL, June 17, 1922, p. 1896.]

Action of Parenteral Injections of Milk in Different Internal Diseases.—Högler and Seidel attribute the untoward effects of parenteral injections of milk to its high content of micro-organisms and toxins. If milk is obtained under aseptic precautions and sterilized, intramuscular injections of 5 to 10 c.c. are hardly ever followed by fever or subjective disturbances. They had favorable results in arthritis, bursitis, tendovaginitis, and bronchitis. They observed a distinct diuresis eight to twelve hours after the injections. This may be in connection with the effect of the treatment on inflammatory edemas.

Oral Râles.—Schick never observed râles in beginning tuberculosis by auscultation of the mouth. They are present in cases of cavities and bronchitis. Since the cavities may be deep in the tissues, oral auscultation serves for quick orientation as to the extent of the disease.

Bacteriuria as Cause of Vulvitis.—Bucura had favorable results with hexamethylenamin in the treatment of vulvitis, which is frequently caused by bacteriuria.

Abdominal Stasis.—Hess discusses the pathogenesis and symptoms of blood stasis in the abdominal organs. The paradoxic differences in the affections of the single organs may be explained by a predisposition of the most severely changed organ. Vascularization and susceptibility to "poisons of stasis" are determining factors.

Zeitschrift für Tuberkulose, Leipzig

38: 81-160 (April) 1923

*Test for Oversensitiveness in Tuberculosis. Fischer.—p. 81.
*Tubercle Bacilli in Blood and Römer's Reaction. F. Ishiwara.—p. 86.
Syphilis and Pulmonary Tuberculosis. F. Koester.—p. 94.
Treatment of Pulmonary Tuberculosis with Phosphorus. Rückle.—p. 101.
Tuberculosis and War. E. Fürth.—p. 106.

Comparison Between Intradermal Reaction to Tuberculin and Own Serum as Measure of Specific Oversensitiveness in Tuberculosis.—Fischer induced intradermal reactions with a mixture of patient's own serum and tuberculin (diluted 1:5,000), and tuberculin alone. The results were read after sixty hours, and he believes that they are an index of the degree of toxemia and of the amount of circulating antibodies. The proportion is larger than 1:1 in chronic cheesy fibrous pulmonary tuberculosis. Progressive healing causes a ratio less than 1, though some favorable cases remained at the proportion of 1:1.

Tubercle Bacilli in Blood, and Römer's Reaction.—Ishiwara surveys 3,444 cases from the literature and reports his own findings in forty-six cases. His preparations from blood were positive in six cases, the experiment on guinea-pigs in nine cases. Adding doubtful results, he figures with nineteen positive cases—41 per cent.—especially in the third stage. Römer's experimental tuberculin reaction was negative in three certainly positive instances.

Zentralblatt für Chirurgie, Leipzig

50: 825-856 (May 26) 1923

*Osteoplastic Wedge Resection. W. Porzelt.—p. 826.
*Sphincter Equivalent in Artificial Anus. R. Haecker.—p. 827.
Two Cases of Periarterial Sympathectomy. J. Philipowicz.—p. 829.
*Periarterial Sympathectomy in Scleroderma. W. Horn.—p. 831.
*Rupture of Patellar Ligament. J. Philipowicz.—p. 833.

Curving Osteoplastic Wedge Resection in Ankylosis with Genu Valgum and Genu Varum.—Porzelt recommends the osteoplastic knee-joint resection of Iselin as possessing advantages over Helferich's curvi-cuneiform osteotomy for the correction of bony ankylosis of the knee with contracture. Iselin implants on the opposite side a thinner bone wedge taken from the apex of the curvature angle to prevent further shortening. The wedge guarantees better protection against a recurrence than Helferich's method. The advantages of both methods can be applied to the more difficult cases in which genu flexum exists with genu valgum or genu varum. Thereby, not only a further shortening is prevented, but coaptation of larger cut surfaces is effected, which insures better healing and gives better protection against shifting of the bone ends.

Sphincter Equivalent in Artificial Anus.—In cases in which, on account of a rectal carcinoma near the anal opening,

amputation of the rectum and the introduction of an artificial (sacral) anus is indicated, Haecker recommends, either before or after the operation, the preparation of a Maydl artificial anus that can be closed by means of a Sauerbruch skin tube (as for a cineplastic amputation).

Periarterial Sympathectomy in Scleroderma.—Horn thinks his case may be the first one in Germany in which sympathectomy has been used in scleroderma. In view of the uselessness of the treatment hitherto applied, he thinks the favorable results in his case—that of a young woman, aged 23, who three years previously observed a hardening of the skin in a circumscribed area on the left forearm—are very encouraging. During the next few years the disease extended to the whole left arm. Six months previously the disease process appeared on the right arm. The patient had been treated in various hospitals with iodin, ointments, baths, massage, quartz lamp and roentgen rays, but the disease process advanced steadily. The brachial artery immediately below the axilla was exposed. The artery was embedded in tough, hard tissue. The adventitia was dissected free for 8 to 10 cm. and extirpated. Fourteen days after the operation a retrogression of the trophic changes became manifest. The skin slowly regained its elasticity. On the forearm and hand there are still slight traces of the malady, which may or may not clear up eventually. He now proposes to operate in the same way on the right arm.

Etiology of Laceration of the Patellar Ligament.—Philipowicz describes two cases of laceration of the patellar ligament, which is of rare occurrence, as compared with fracture of the patella. In the first case, a man aged 48 had slipped and fallen on his knee. A severe pain set in and he could not get up without assistance. A curvilinear incision was made just below the patella. A Z-shaped laceration of the middle portion of the patellar ligament was found. The edges were frayed. The joint was gaping open. After freshening, the ligament and the lacerated capsule were sutured with strong catgut button sutures and the leg was put in a plaster cast. After three weeks, active and passive movements were cautiously begun and in another week the patient got up, but retained a bandage for a time. Six weeks later completely normal motion had been restored. In both cases syphilis was present, the Wassermann test being positive. The changes were evidently associated with endarteritis on a syphilitic basis. The tendon was weakened by a deficient blood supply. In the motion of the leg it was constantly used and became over distended, which led to its fatty degeneration and fragility.

Zentralblatt für Gynäkologie, Leipzig

47: 737-784 (May 12) 1923

*Results of Radiotherapy in Cancer of Uterus. Flatau.—p. 737.
*Uterine Carcinoma, with Long Latency. A. Blau.—p. 744.
Sarcoma of Rectovaginal Septum: Radiotherapy of Sarcoma. Szamek.—p. 752.
Rupture of Uterus Following Cesarean Section. P. Keller.—p. 758.
Balneology and Gynecology. W. Engelmann.—p. 760.
Prolapse Recurring After Schauta-Wertheim Operation. Paunz.—p. 764.

Results of Radiotherapy in Cancer of the Uterus.—Flatau discusses the relative merits of operative treatment and radiotherapy. When the treatment is spread over several months and divided into two or three series, there is always a large percentage of patients who for various reasons—exaggerated optimism, indolence, or lack of funds—fail to appear for the second or third series, which fact explains, in part, the large number who remain uncured. Radiotherapy must be intensified if it is to compete with operative treatment. Flatau, therefore, sets up three requirements for a standardized method: (1) The greatest possible homogenization and hardening of the ray cone; (2) irradiation of the whole pelvis (uterus, ligaments, lymph paths, lymph glands, connective tissue) in one large field, and (3) simultaneously (or immediately preceding or following) a combination of excentrically applied and "incentrically" active distant roentgenization and an "incentrically" applied and excentrically active radium treatment. Flatau has been applying such a standard method for nearly three years and now gives a preliminary report of his results. He uses 50 mg. of radium within the cervix for forty-eight hours; 50 mg. of radium vaginally for twenty-four hours; immediately preceding or immediately following this treatment he applies an irradiation of the whole pelvis with the aid of four distant fields, one dorsal, one ventral and two lateral. Out of 22 operable cases, 80 per cent. are still living; 5 are dead or have been lost sight of; out of 46 inoperable cases, 22 per cent. are still living; 34 are dead or have left the community. The results of operative treatment, Flatau holds, cannot compare with these, and as regards the inoperable cases, the 12 patients alive and well today is so much net gain. He emphasizes, however, that radiotherapy requires a skilled and experienced operator to the same extent as surgery. The ingestion of a teaspoonful of sodium chlorid immediately following irradiation has been found to exert a markedly prophylactic action as regards after-effects of irradiation.

Uterine Carcinoma with Long Period of Latency.—Blau gives the case history of a patient who, twelve years after a uterine carcinoma was diagnosed through curettage and microscopic examination, presented herself, disquieted by irregular hemorrhages, for reexamination. The carcinoma was found to be still operable and a radical vaginal operation followed, with good results. The patient was dismissed cured, after two weeks.

47: 785-816 (May 19) 1923

*Reinfusion of Own Blood After Operations. F. Burgkhardt.—p. 786.
Dietrich's Statistics on Febrile Abortion. W. Bronsert.—p. 789.
Death Due to Perforated Acute Septic Gastric Ulcer After Criminal Abortion. R. Falk.—p. 792.
Instrument for Localization in Deep Roentgenotherapy. T. Brandess.—p. 798.

Reinfusion of Patient's Own Blood in Vaginal Hemorrhages and Operations.—Burgkhardt objects to the rectal reinfusion of the patient's own blood on account of the varying resorptive activity of the rectum. He reinjects the blood intramuscularly. After the operation, the blood collected in a vessel containing physiologic sodium chlorid solution is immediately strained through five or six layers of muslin, which rids it of impurities, also of bacteria. The fluid blood is then injected intramuscularly into the thigh or the buttocks. A tight compress is then applied over the site of the injection to hasten resorption. Burgkhardt has used this method in about fifty cases in which the hemorrhages were due chiefly to chronic metritis, endometritis, myoma and sarcoma of the uterus. The quantity of blood reinjected ranged from 50 to 400 c.c. Of late he has put blood-soaked sponges from abdominal operations in sterile sodium chlorid solution, pressed them out, strained the solution and injected it intramuscularly. The results have been uniformly excellent. In all cases the patients recovered much sooner than did others without the reinfusion of blood.

Zentralblatt für innere Medizin, Leipzig

44: 273-288 (April 28) 1923

*Significance of Grocco-Rauchfuss Triangle. A. Lehndorff.—p. 273.

Diagnostic Significance of Grocco-Rauchfuss Triangle.—Lehndorff found the Grocco-Rauchfuss triangle of dulness at the base of the healthy side in sixteen out of seventeen cases of pneumonia. Though it is constant in pleuritic exudates, it cannot be used for differential diagnosis.

Casopis lekaruv ceskych, Prague

62: 249-276 (March 10) 1923

*Alternating Respiration. M. Netousek.—p. 249.
Primary and Secondary Zonular Keratitis in Seeing Eyes. J. Janku.—p. 251. Cont'd.
Cerebral Polyneuritis with Menière's Syndrome. P. Zaviska.—p. 254.
*Agrammatism. A. Heveroch.—p. 256. Conc'n.
Sedimentation Speed of Erythrocytes. J. A. Sefcik.—p. 259. Conc'n.

Alternating Respiration.—Netousek describes a case of alternation between deep and superficial breaths in a case of azotemic uremia and malignant endocarditis. He points to the analogy with pulsus alternans.

Agrammatism.—Heveroch analyzes the relation of thought and speech. The thought causes a sentence which is formed automatically, and starts new thoughts. Correct grammatical speaking is an automatic function, which may be defective. Some patients, who are able to speak only in "telegram style,"

may be able to write correctly, because they have more time for it. He is skeptical in regard to the present attempts to localize the disturbance exactly.

Journal of Biochemistry, Tokio

1: 175-332 (April) 1922. English and German Edition

*Synthetic Production of Cynurenic Acid. Z. Matsuoka and S. Takemura.—p. 175.
Biochemical Study of Japanese Persimmon. S. Komatsu and H. Ueda.—p. 181.
Influence of Guanidin Acidosis on Fat Content of Blood. C. K. Watanabe.—p. 195.
Nature of Carbohydrates in Konjak (Arum) Plant. K. Goto.—p. 201.
Formation of Volatile Oil from Leucin. S. Kodama.—p. 213.
Ferment Content of Python Saliva. N. Fuse.—p. 219.
Chemistry of Rice Plants Resistant to Blast. K. Miyake and M. Adachi.—p. 223 and p. 241.
Lipolysis by Certain Saprophytes. N. Shibata.—p. 249.
*Formation of Fat from Albumin. T. Nishikata.—p. 261.
*Determination of Epinephrin. S. Kodama.—p. 281.
Electromotor Behavior of Frog Skin. K. Hashida.—p. 289.
Calcium and Magnesium Content of Blood and Tissues of a Starved Animal. K. Goto.—p. 321.

Synthetic Production of Cynurenic Acid in Surviving Liver.—Dogs' livers were perfused with Ringer's solution to which tryptophan or indolpyrocatechin had been added. The mechanism of the resulting synthetic production of cynurenic acid is discussed.

Formation of Fat from Protein.—Mishikata reports that maggots fed on blood fibrin—which contains absolutely no carbohydrate—all developed fat. The possibility of production of fat from protein thus seems to be established.

Colorimetric Determination of Epinephrin.—Kodama has applied to the Folin, Cannon and Denis method of epinephrin determination, Takata's standard color test for uric acid determination, slightly modifying the technic. He explains that the method has many advantages over the original Folin method.

Tohoku Journal of Experimental Medicine, Sendai

4: 1-148 (April 30) 1923. German, French, English Edition

Hemolysis by Pneumococci. T. Takami.—p. 1.
Agglutination of Dysentery Bacilli. Y. Ogasawara.—p. 8.
Agglutination of Paradysentery Bacilli. K. Aoki.—p. 12.
Action of Drugs on Blood Pressure. M. Yokota.—p. 23.
Action of Aconitin on Intestinal Motor Function. M. Yokota.—p. 52.
Resorption of Typhoid and Paratyphoid Bacilli. S. Katsura.—p. 58.
*Signs of Death by Drowning. K. Yamakami.—p. 88.
*Pharmacologic Efficacy of Digitalis Leaf. M. Watanabe.—p. 98.

Determination of Death by Drowning.—Yamakami's analysis of the various signs of death from submersion shows that none of those in vogue is constant, and none is absolutely reliable. But he asserts that a pronounced difference in the sodium chlorid content of the blood in the two ventricles testifies almost certainly to recent death from drowning. His research thus confirms Gettler's, which was reported in THE JOURNAL, Nov. 19, 1921, p. 1650.

Efficacy of Digitalis Leaf.—Watanabe's extensive research has demonstrated the advantages of testing digitalis by adding the drug to Ringer's solution in which an excised auricle of a frog's heart is being kept alive. The time needed to cause the arrest of the auricle is recorded, and also the quantity of strophanthin which is required to have the same arresting effect in the same length of time. This method of titration eliminates errors from difference in the rate of absorption and in the sensibility of the animals. Among the points learned by this improved method he mentions that if the packing is perfectly air-tight, the drug loses very little in efficacy in spite of frequent openings, provided that each time it is well closed again. Otherwise it loses its efficacy, sometimes entirely, by the end of the year. When the infusion stands, if the reaction is neutral or alkaline, the efficacy rapidly diminishes to about two thirds in three days. On the other hand, with an acid reaction, the efficacy gradually increases, and there is no loss even in seven days. Hydrochloric acid in a concentration of less than 0.5 per cent. seems to be the optimum.

Mededeelingen v. d. Burg. Geneesk. Dienst, Batavia

343-473, 1922. English Edition

Annual Report of the Civil Medical Service in the Netherlands East Indies for the Year 1920.—p. 343.

Acta Medica Scandinavica, Stockholm

58, Fourth Supplement: 1-224 (March 21) 1923

*The Blood Sugar in Man. Karen Marie Hansen.—p. 1.

The Blood Sugar in Man.—Hansen's monograph is in English. The variations in the sugar content of the blood under different conditions in the healthy, the diabetic and others are discussed from various standpoints. A functional test is proposed for diabetes, the "one-gram curve." It is based on the assumption that the rise in the level of the blood sugar after administration of glucose, while fasting in the morning, is always the same per gram of glucose in the same person. The one-gram rise must be regarded as a kind of inverse expression of the power of hormone production. After a few days of absence of glycosuria, the fasting patient is given 10 or 20 gm. of glucose, and samples of blood are taken at intervals of a couple of minutes at first and then every five minutes. In normal persons, the organism speeds up the removal of the sugar from the blood to such an extent that the concentration in the blood does not rise above 0.18 per cent. This power of accelerating the removal of the glucose from the blood stream is much impaired in diabetes. Another point brought out by this research is that the blood sugar after intake of glucose increases in waves. Ignorance of these oscillations has led to mistaken conclusions in previous researches, as figures were recorded from the peaks or the valleys of the moment.

Hospitalstidende, Copenhagen

66: 297-312 (April 18) 1923

*Ammonia Content of the Blood. Bisgaard and Nørvig.—p. 306. Conc'n p. 313.

Methods for Determining the Ammonia Content of the Blood.—Bisgaard and Nørvig speak of two new methods for determining the ammonia content of the blood: the Henriques and Christiansen aeration method, and the Iversen micromethod. They obtained the same results as Nash and Benedict with their short aeration period, but with the three hours' aeration of Henriques and Christiansen, they obtained the same high figures as in their previous publications.

66: 313-328 (April 25) 1923

Adenoids and Exudative Diathesis. V. Schmidt.—p. 318. Conc'n p. 329.

66: 329-344 (May 2) 1923

*Operations for Ureter Calculus. Holst and Felding.—p. 336. Conc'n p. 345.

Diagnosis of Stone in the Ureter, with Report on Eighteen Operations.—Holst and Felding review their experience with thirty-three cases of a calculus in the ureter. Operative treatment of stone in the ureter is generally indicated because of present and future danger of infection of the corresponding kidney, and of hydronephrosis or anuria. Eleven of the seventeen patients operated on had infected urine, and two had anuria. Two patients died, one with acute pyelonephritis in the corresponding kidney, the other kidney being rudimentary. The other patient succumbed to genital tuberculosis, for which he had been treated two years.

66: 345-360 (May 9) 1923

*Tumor Metastasis with Acute Anemia. V. Ellermann.—p. 352.
*Wassermann Tests of the Blind and Deaf-Mutes. H. Boas.—p. 357.

Acute Anemia with Marrow Metastasis of Gastric Cancer.—Ellerman's patient, aged 46, had neuralgic pains in the bones with ecchymoses, the case being clinically diagnosed as myeloblastic leukemia. In the course of ten days the hemoglobin percentage declined from 89 to 18, and blood tests showed anisocytosis, erythroblasts and some myeloblasts, with normal leukocytes. There were no necrotic processes in mouth or throat, and no enlargement of the spleen; stomach examination showed achylia, but no retention. Necropsy revealed carcinoma in the stomach with metastasis in liver, lymph glands and bone marrow. He believes that severe anemia in cancer may be attributable to metastasis in the marrow, diagnosis of such cases being frequently supported by erythroblasts in the blood.

Wassermann Reaction in the Blind and in Deaf-Mutes in Denmark.—Boas compares the findings of Thomsen and

Leschly in 1911, of no positive reaction among 146 blind persons, and 5 positive reactions among 344 deaf-mutes, with his recent findings of 5 positive reactions among 157 blind, and no positive response among 277 deaf-mutes. He says there is no reason to suppose that hereditary syphilis is more frequent now than formerly.

66: 361-376 (May 16) 1923

*Wound of Brain Through Mouth. Fabricius-Møller and Winther.—p. 361.

Wound in the Brain Made by Stab of Foil Through the Mouth.—Fabricius-Møller and Winther report a case so singular that the literature, including that of the late war, shows only one similar. While fencing, the blunt tip of the antagonist's foil was pushed through the mouth, penetrated the base of the skull, and directly or indirectly injured the brain. The boy, aged 13, became unconscious but revived quickly and seemed normal for six hours, when aphasia and stupor set in, followed in five hours by right hemiplegia, with spasms in the lower extremities, which have increased during the last few months. Roentgenography revealed nothing abnormal, but the nature of the hemiplegia indicates lesions of the cerebral cortex, corona radiata, or the internal capsule. The pathologic picture indicates subdural hemorrhage in which the blood has gradually spread over large areas of the brain convolutions and caused slight pressure on Broca's, Wernicke's, or other centers. This would explain the present spastic condition, while the paresis may be due to direct lesions of nerve tracts near the base. They believe that the present condition has a dual cause of both extracerebral hemorrhage, probably subdural, and a slight contusion of the brain tissue, and that the exacerbation of symptoms indicates an intracranial pathologic process in which parts of the brain are subject to pressure from a cyst, abscess or hematoma, for which operation may be indicated.

66: 377-392 (May 23) 1923

*Typhus, History and Statistics. A. Norgaard.—p. 377, Conc'n, p. 393.

Typhus.—Norgaard says there has not been a single case of typhus in Denmark since 1907, while Russia had 45,000 deaths from this disease during the period 1905-1911, and Poland 11,000 (2,000 in Galicia). In Serbia, every fifth person was attacked by typhus from December, 1914, to June, 1915, and 135,000 died. Of 70,000 Austrian war prisoners in Serbia, 30,000 died from typhus. Of 340 Serbian physicians, dying from typhus, 160 died in actual service. In 1918-1919, about 47,000 cases were reported in Petrograd and the mortality rate from this disease was 9 per cent., while in Moscow, 104,000 were infected. In Poland, typhus is considered a winter disease, contrary to cholera, which is a summer malady, the explanation being that the Poles shed their sheepskin coats with warm weather and water becomes more available when the ice melts. Physicians for war prisoners took 0.2 gm. quinin a day to make their blood less tasty. The logic of this is not obvious, since the lice would not know without tasting. In Russia, practitioners spray petroleum on their underwear. He says the reason there was no death among the 227 typhus patients treated at the Danish Hospital in Poland in 1921, though the mortality rate was high in nearby hospitals, was due to an energetic digitalis therapy.

Hygiea, Stockholm

85: 401-448 (May 31) 1923

*Uveitis with Parotitis. F. Berg.—p. 401.
*Abortive Treatment of Syphilis. U. Müllern-Aspegren.—p. 421.

"Uveoparotid Fever."—Berg reports a case of subacute febrile uveoparotitis, with bilateral parotitis and iridocyclitis, but without iris nodules and without facial paresis, in a woman, aged 23. It otherwise corresponds to the three cases described by Heerfordt in 1909. He reviews nearly forty cases, occurring mostly between the ages of 11 and 35, recorded in the literature, summarizing the symptoms of this fairly definite clinical picture. Because of the similarity of the iridocyclitis in this uveoparotitis to tuberculous iridocyclitis, even when the iris tubercles are absent, he assumes a tuberculous etiology, though syphilis may show a similar picture. This position is sustained by the seventy-five cases of tuberculous Mikulicz' disease, compiled by Schmalfuss. He believes that the facial paresis is a complication of the parotitis.

Abortive Arsphenamin Treatment of Syphilis.—Müllern-Aspegren, on the basis of his own experience (all relapses within the first year), and that of the Serologic Institute of Copenhagen (77 per cent. of the recurrences within two years after treatment), says it is safe to consider a person cured if no serologic or clinical symptoms have appeared within two years after the last injection. Later examinations of 141 seronegative and eighty-one seropositive patients with primary syphilis showed 2.4 and 9 per cent. recurrences, respectively.

Ugeskrift for Læger, Copenhagen

85: 349-372 (May 17) 1923

*Arc Light Treatment in Non-Tuberculous Dermatitis. S. Lomholt.—p. 349. Conc'n p. 390.
*Basal Metabolism in Ichthyosis. Marie Krogh and With.—p. 353.
Schick Immunization Against Diphtheria. H. Levinsen.—p. 357.
*Etiology of Wrinkles. C. Engelbreth.—p. 358.
*Death From Quinidin Treatment for Arrhythmia. T. Plum.—p. 359.

Concentrated Carbon Arc Light Treatment of Nontuberculous Dermatitis.—Lomholt analyzes the results in 42 cases treated at the Finsen Light Institute from September, 1921, to April, 1922. Of the total number of patients, 13 had neurodermatitis; 9 dry eczema (among them 2 who had been under treatment for five and six years by roentgen and other methods); 14 had weeping eczema, all chronic, and 5 had acute eczema. Doses varied from 10 to 30 minutes, repeated from two to four times, with satisfactory results in all instances. Since that time he has treated 37 other patients, among them a man, aged 63, with lichen ruber hypertrophicus of fourteen years' standing. After 15 minutes' exposure the skin became almost natural and the intense itching disappeared. Jansen's histologic investigations showed that the Finsen light in two hour doses penetrates from 0.5 to 1 mm. into the skin, and that the effects of the rays are elective, cells being destroyed while the supporting tissues remain nearly unaffected. For this reason, permanent injury of the skin is never caused by the Finsen light. Doses used for treatment of epidermis vary from ten to thirty and occasionally sixty minutes, with 55 amperes. Chronic eczemas in which infiltration and lichenization of the skin are the chief changes, generally yield to the Finsen light treatment though they are refractory to both roentgen rays and ointments. Abolition or reduction of pruritus and objective benefit may be expected, in the chronic, stationary and torpid cases. The Finsen treatment was equally successful in 11 cases of xanthoma.

Basal Metabolism in Ichthyosis.—Krogh and With, on the basis of twenty-one investigations, found a relation between ichthyosis and hypofunctioning of the thyroid glands, and that thyroid preparations favorably affected this disease. Thyroid treatment is indicated when the metabolism is below normal, but should be stopped as soon as the normal is reached.

Cause of Wrinkles.—Engelbreth says that wrinkles come within the field of medicine, and that they are due not so much to old age as to the conditions created in the corium by the chemical rays of the sunlight.

Fatal Embolism After Quinidin Treatment for Arrhythmia.—Plum reports the death of a woman, aged 34, after injection of 1.2 gm. quinidin sulphate in the course of two days. She had a chronic mitral defect which had caused auricular fibrillation, but there was no acute endocarditis nor recent pericarditis, and compensation was tolerable, though necropsy showed adhesions at the base. The valvular disease was complicated by an exacerbation of a chronic cholecystitis. This had calmed down, and she had been treated with a digitalis preparation eight days before starting the quinidin. The heart action improved to 108, pulse 96, but the improvement was followed immediately by cerebral embolism, fatal in seventeen hours. This case belongs to the first group of Schwensen's classification of cases dangerous for quinidin treatment, cases in which thrombi, formed in the dilated fibrillating auricles, are dislodged on resumption of normal auricular activity.